REPORT | FOURTH SESSION | THIRTY-NINTH PARLIAMENT

Special Committee on Cosmetic Pesticides

LEGISLATIVE ASSEMBLY
PROVINCE OF BRITISH COLUMBIA

MAY 2012

May 17, 2012

To the Honourable
Legislative Assembly of the
Province of British Columbia

Honourable Members:

I have the honour to present herewith the Report of the Special Committee on Cosmetic Pesticides.

The Report covers the work of the Committee in the third and fourth sessions of the 39th Parliament in regard to its inquiry into the feasibility of a province-wide ban on the cosmetic use of pesticides.

Respectfully submitted on behalf of the Committee,

Bill Bennett, MLA
Chair

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Composition of the Committee

Third Session (June 2 – October 3, 2011)

Dr. Margaret MacDiarmid, MLA	Chair	Vancouver-Fairview
Rob Fleming, MLA	Deputy Chair	Victoria–Swan Lake
Bill Bennett, MLA		Kootenay East
Scott Fraser, MLA		Alberni–Pacific Rim
Barry Penner, MLA		Chilliwack-Hope
Michael Sather, MLA		Maple Ridge–Pitt Meadows
John Slater, MLA		Boundary-Similkameen
Ben Stewart, MLA		Westside-Kelowna
John Yap, MLA		Richmond-Steveston

Fourth Session (October 3, 2011 to May 17, 2012)

Bill Bennett, MLA	Chair	Kootenay East
Rob Fleming, MLA	Deputy Chair	Victoria–Swan Lake
Murray Coell, MLA (from January 3, 2012)		Saanich North and the Islands
Scott Fraser, MLA		Alberni–Pacific Rim
Douglas Horne, MLA (from March 29, 2012)		Coquitlam–Burke Mountain
Barry Penner, MLA (to January 3, 2012)		Chilliwack-Hope
Michael Sather, MLA		Maple Ridge–Pitt Meadows
John Slater, MLA		Boundary-Similkameen
Ben Stewart, MLA		Westside-Kelowna
John Yap, MLA (to March 29, 2012)		Richmond-Steveston

Clerks to the Committee

Kate Ryan-Lloyd, Deputy Clerk and Clerk of Committees
Susan Sourial, Committee Clerk

Research Staff

Josie Schofield, Manager, Committee Research Services
Morgan Lay, Gordon Robinson, Jennifer Ives, Committee Researchers

Terms of Reference

On Opening Day of the fourth session, October 3, 2011, the Legislative Assembly reappointed the Special Committee on Cosmetic Pesticides, which was first struck on June 2, to examine, inquire into and make recommendations with respect to the elimination of the unnecessary use of pesticides in British Columbia and to conduct consultations on this issue with the public and key stakeholders, by any means the Special Committee considers appropriate.

Without limiting the generality of the foregoing to consider, the Special Committee shall specifically consider:

1. The scope of any ban on the sale and use of pesticides, including those used solely for cosmetic purposes; and,
2. Any appropriate exemptions and restrictions on the sale and use, which may apply.

The Special Committee shall provide recommendations to the Legislative Assembly with respect to the development and implementation of legislative provisions regarding the unnecessary use of pesticides.

The Special Committee so appointed shall have all the powers of a Select Standing Committee and is also empowered:

a. to appoint of their number, one or more subcommittees and to refer to such subcommittees any of the matters referred to the Committee;
b. to sit during a period in which the House is adjourned, during the recess after prorogation until the next following Session and during any sitting of the House;
c. to adjourn from place to place as may be convenient; and
d. to retain such personnel as required to assist the Committee;

and shall report to the House as soon as possible or following any adjournment, or at the next following Session, as the case may be; to deposit the original of its reports with the Clerk of the Legislative Assembly during a period of adjournment and upon resumption of the sittings of the House, the Chair shall present all reports to the Legislative Assembly.

Executive Summary

On June 2, 2011 and again on October 3, 2011 the Legislative Assembly of British Columbia approved a motion to appoint a Special Committee on Cosmetic Pesticides (the Committee). The Committee's mandate was to examine, inquire into, and make recommendations with respect to the development and implementation of legislative provisions regarding what the terms of reference characterize as "the unnecessary use of pesticides in British Columbia" and to conduct consultations on this issue with the public and key stakeholders.

The creation of the Committee followed the introduction of varied restrictions on the cosmetic use of pesticides in seven Canadian provinces, the passage of 40 municipal bylaws on cosmetic pesticide use in British Columbia, and a 2009-10 BC Ministry of Environment public consultation on the issue of a possible ban on pesticides used for cosmetic purposes.

The all-party Committee developed an inclusive strategy to learn about pesticides and pesticide use. It received briefings on the existing regulatory framework, heard presentations from 21 invited stakeholders, and hosted a two-month-long e-consultation that allowed British Columbians to submit written or video submissions or complete an e-questionnaire. Throughout this process, committee members focused on: understanding the scientific evaluation process that pesticides are subject to before being registered for sale in Canada; learning about the possible health and environmental effects of pesticides; and developing an understanding of how pesticides are sold, used, and regulated in British Columbia.

Over 8,600 groups and individuals participated in the e-consultation, the largest number of submissions a BC parliamentary committee has ever received. Of the 7,300 e-questionnaires submitted, almost 5,000 supported a ban on the sale and use of pesticides for cosmetic purposes. Presentations from stakeholders and written submissions received through the e-consultation process provided varied perspectives on four main themes: the safety of pesticides; the use of pesticides in residential and industrial settings; the federal Pest Management Regulatory Agency's (PMRA) process of testing and registering pesticides for sale in Canada; and existing pesticide legislation in British Columbia.

Over the course of its ten-month-long inquiry the majority of the Committee was struck by the information it received on the PMRA's extensive pesticide registration process. The process includes comprehensive and precaution-based evaluation of risk in situations where homeowners apply pesticides. Officials from the BC Ministry of Environment provided information on the ***Integrated Pest Management Act*** that governs pesticide sale and use in the province.

The Committee dedicated a significant amount of time to examining research from stakeholders and the public that proposes a link between pesticides and negative health outcomes. It also heard about the possible negative effects pesticides can have on the natural environment. Submitters encouraged the Committee to recommend a province-wide ban based on the view that the precautionary principle is not being applied. Those who argue a ban is unjustified emphasized the thoroughness of

the scientific processes the PMRA uses to determine that pesticides are safe for sale and use in Canada. They also stressed the important role pesticides play in improving the value and enjoyment of green spaces, in controlling invasive plants, and in supporting forestry and agriculture.

As part of its inquiry into the feasibility of a BC ban on the cosmetic use of pesticides, the Committee reviewed other jurisdictions' experiences with bans. While these bans generally share a common purpose — the protection of human health and/or the natural environment from perceived unnecessary exposure to pesticides — the approach varies from province to province. In examining what other jurisdictions have done, the Committee noted that to date no other province has used an all-party parliamentary committee to investigate the cosmetic use of pesticides. Also, this Committee's commitment to understanding pesticide regulation and the work and role of the PMRA appears to be unprecedented.

Throughout the committee inquiry the all-party Special Committee worked in a collaborative manner and strived to seek common ground. However, committee members have divided on party lines over the justification for a province-wide ban on the cosmetic use of pesticides. The Committee assessed all the evidence carefully, taking more time than originally planned, and the majority of members concluded that currently there is insufficient scientific evidence to warrant a province-wide ban on the cosmetic use of pesticides. Based on currently available studies, the majority cannot justify disagreeing with the findings of the PMRA's comprehensive pesticide testing and re-evaluations. The minority, however, concluded that there is sufficient scientific evidence available for a province-wide ban on the cosmetic use of pesticides.

In order to achieve the goals of reducing pesticide use throughout the province, and ensuring safe and proper use of approved products by unlicensed applicators, the Committee makes 17 recommendations that include restricting the sale and use of Commercial-class pesticides, improving enforcement of existing regulations, and strengthening training and public education related to pesticides use. The Committee recommends regulatory changes to: bolster retail rules, improve sales monitoring, and enhance the training of certified pesticide applicator and dispensers. The Committee also recommends strategies to increase public knowledge of safe pesticide use, to encourage golf courses to fully embrace the pillars of integrated pest management, and to develop a superior pesticide-return program.

The Committee believes these recommendations will protect British Columbians from unnecessary exposure to pesticides, will provide improved education, will lead to safer use by unlicensed applicators, and will encourage the overall reduction of pesticide use while providing individuals, businesses and industries with access to the tools necessary to enhance their personal green spaces, and control pests and invasive species.

Introduction

Pesticides play an important role in our economy and society. They aid in the protection of our food supply, the control of invasive species, the preservation of provincial forest assets, the maintenance of lawns and playing fields, and the control of pests in our gardens and homes.

The approximately 5,000 pesticides that may be legally used in Canada are registered and evaluated by Health Canada's Pest Management Regulatory Agency (PMRA). Pesticides approved for registration by the PMRA are classified as Domestic, Commercial, or Restricted based on their intended use. In 2003, British Columbian businesses and consumers purchased or used over 4,666,709 million kg of pesticide active ingredients, excluding most Domestic-class pesticides.[1] It is estimated that home and garden use of pesticides constitutes approximately 5% of the total annual pesticide sales in Canada.[2]

Pesticide use became a controversial issue with the publication of Rachel Carson's book, *Silent Spring* in 1962. Today there is a wide diversity of opinion about the impact of pesticide use on human health and the natural environment. Generally, governments in Canada promote reduced reliance on pesticides, while some health and environmental organizations advocate outright bans, believing that pesticides can have serious consequences for human health and the natural environment. These health and environmental concerns have led seven provinces to implement restrictions on the cosmetic use of pesticides, beyond those required by Health Canada. Bans are now in place in Québec, Ontario, New Brunswick, Prince Edward Island, Alberta, Nova Scotia, and Newfoundland and Labrador with different restrictions on which products and uses are banned. (See Appendix A: Timeline)

Currently in BC and other provinces across Canada there exists a patchwork of municipal bylaws implemented in response to statements by health and environmental advocates who have influenced public concerns about pesticide safety. In 1991, the Town of Hudson, Québec was the first jurisdiction in Canada to adopt a pesticide bylaw. In BC, Port Moody passed the first municipal ban in 2003; to date, 40 municipalities in the province have passed bylaws restricting the cosmetic use of pesticides. While these municipal bylaws reflect public support for restrictions on the cosmetic use of pesticides, they have created a piecemeal system of inconsistent and often ineffective rules regarding pesticide use.

In the August 25, 2009 Speech from the Throne, the provincial government committed to consult with British Columbians on, "new statutory protections to further safeguard our environment from cosmetic chemical pesticides." Following the Throne Speech, the Ministry of Environment posted a discussion paper on its website to gather public input on this topic. The consultation process yielded

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[1] EKON Environmental Ltd. *Survey of Pesticide Use in British Columbia: 2003.* (Victoria: Environment Canada and BC Ministry of Environment, 2005), p. ii.

[2] Canada. Parliament. House of Commons. Standing Committee on Environment and Sustainable Development. *Report 1: Making the Right Choice for the Protection of Health and the Environment.* 36th Parliament, 2nd session, 1999-2000. (Ottawa: Queen's Printer, 2000), p. 20.

over 8,000 comments, signatures on petitions, and submissions expressing a variety of positions on the subject. After analyzing the data and opinions, the government concluded that the complexity of the issue and the indirect implications of a ban ruled out speedy implementation.

Between 2009 and 2011, three Public Bills in the hands of Private Members of the Legislative Assembly proposed a ban on the sale and cosmetic use of pesticides. In each case, the Bill did not proceed beyond first reading in the session it was introduced.

On May 4, 2011, Premier Christy Clark publically expressed an intention to proceed with legislation that would circumscribe the use of pesticides for cosmetic purposes. The Premier also indicated her intent to engage with all interested parties, including the public and the opposition, in a consultative and bi-partisan manner.

On June 2, 2011, a special committee of the Legislative Assembly was appointed and asked by the House to examine the elimination of the unnecessary use of pesticides in the province. The creation of the Special Committee on Cosmetic Pesticides represented the first time an all-party parliamentary committee has been used at the provincial level to conduct consultations on this topic. Most of the provinces that have already implemented bans chose the option of a ministry-led consultation, usually in the form of a discussion paper.

This report is divided into five sections. The first section describes the work of the Special Committee on Cosmetic Pesticides and the e-consultation process. The second section outlines the regulatory framework of the sale and use of pesticides in Canada. The third section presents the differing perspectives the Committee heard. The report then presents other jurisdictions' experiences with bans. The final section contains the committee members' conclusions and recommendations.

Work of the Committee

On June 2, 2011, the Legislative Assembly of British Columbia approved a motion creating the Special Committee on Cosmetic Pesticides (the Committee). The Committee's terms of reference were to examine, inquire into and make recommendations with respect to the development and implementation of legislative provisions regarding the unnecessary use of pesticides in British Columbia and to conduct consultations on this issue with the public and key stakeholders. Specifically the Committee was tasked with consideration of: the scope of any ban on the sale and use of pesticides, including those used solely for cosmetic purposes; and any appropriate exemptions and restrictions on the sale and use, which may apply.

On July 6, 2011, the Committee met in Victoria and elected the Chair, Dr. Margaret MacDiarmid, the Deputy Chair, Rob Fleming, and a subcommittee. Its terms of reference were also reviewed, including a discussion of the term "cosmetic".

On October 3, 2011, the Committee was re-appointed for the fourth session of the 39th Parliament. At the organization meeting on October 6, Bill Bennett was elected Chair and Rob Fleming, Deputy Chair. A business plan was adopted that involved consultations with regulators and key stakeholders. An e-consultation was also undertaken to gather public feedback on the objective, scope and implementation of a province-wide ban on the sale and use of pesticides used for cosmetic purposes.

Presentations

The Committee unanimously approved a list of witnesses to invite to make a presentation or to make a written submission. Over the course of its work, the Committee heard a total of 27 presentations. It received initial and follow-up briefings from the main regulators, Health Canada's Pest Management Regulatory Agency and the BC Ministry of Environment. The Ministry of Agriculture and the Ministry of Forests, Lands and Natural Resource Operations participated in the January 25, 2012 meeting. The Committee also heard presentations from 21 key stakeholders: a toxicologist, physicians, health and environmental organizations, local pesticide coalitions, the pesticide industry and business sectors concerned with the impact of a potential ban.

E-Consultation Process

The Committee's e-consultation process was launched on October 17, 2011. In the interest of receiving input from as many British Columbians as possible, the Committee decided to proceed with a web-based consultation involving an e-questionnaire and a call for written submissions and video submissions. To increase awareness of the consultation process and participation, the Committee ran advertisements in newspapers and on one social media site.

By the end of the process, December 16, 2011 the Committee had received 1,358 written submissions, 13 video submissions and 7,304 electronic survey responses. The vast majority of

submissions received were from individual residents of British Columbia, while approximately 550 submissions came from persons and organizations outside of BC. The overall total of 8,675 submissions set a new record for public consultation for a parliamentary committee in BC.

Written Submissions

Written submissions provided an unrestricted medium for respondents to express their opinions. The Committee received a range of submissions including everything from professionally written reports from national organizations to posters drawn by elementary school students. In total the Committee received 1,358 written submissions, 74 of which were made on behalf of organizations. Some environmental and health advocacy groups, as well as the golf industry, established links on their web sites or suggested people participate in the e-consultation. Over 800 of the written submissions received were signed form letters from individuals supporting the positions of these organizations.

Video Submissions

The Committee also received 13 video submissions, the highest number ever received by a BC parliamentary committee. Submitters included high school and university students.

E-questionnaire

The public also had the opportunity to participate by completing an e-questionnaire containing ten questions. The questions were designed to solicit the public's opinions on a possible ban on cosmetic pesticides, their preferred scope of a possible ban, and opinions on how best to implement any changes. The e-questionnaire was the most popular form of public input to the Committee. In total the Committee received 7,304 submissions using this tool. Of those, 193 submissions were from organizations and the remainder from individual citizens.

Of the 7,300 people who responded to the e-questionnaire, over 5,600 believed some uses of pesticides are solely cosmetic. Almost 5,000 supported a ban on the sale and use of pesticides for cosmetic purposes. Their reasons for supporting a ban, ranked in order of most to least common, were: pesticides are harmful to the environment; pesticides pose a risk to human health; there are safer alternatives on the market; to promote consumer safety; and to reduce the reliance on pesticides. The responses of the approximately 2,000 people opposing a ban indicated they believe that existing regulations are sufficient, that the need for a ban is not supported by scientific evidence; and that a ban will have a detrimental effect on business or industry. A final tally of the public's responses to all ten questions is provided in Appendix B.

A list of participants who presented to the Committee and submitted written, video or e-questionnaire submissions begins on page 67.

Meeting Schedule

Third Session

July 6, 2011	Organization Meeting	Vancouver
July 15, 2011	Subcommittee Meeting	Victoria
August 22, 2011	Briefing	Victoria
September 14, 2011	Subcommittee Meeting	Victoria

Fourth Session

October 6, 2011	Organization Meeting Briefing	Victoria
October 26, 2011	Presentations	Victoria
November 7, 2011	Presentations	Vancouver
November 8, 2011	Presentations	Vancouver
November 17, 2011	Presentations	Victoria
November 22, 2011	Deliberations	Victoria
January 10, 2012	Deliberations	Victoria
January 11, 2012	Deliberations	Victoria
January 17, 2012	Briefing (Video Conference)	Victoria
January 25, 2012	Briefings	Victoria
February 15, 2012	Deliberations	Victoria
February 20, 2012	Subcommittee Meeting	Victoria
February 23, 2012	Subcommittee Meeting	Victoria
February 29, 2012	Deliberations	Victoria
March 8, 2012	Subcommittee Meeting	Victoria
April 18, 2012	Subcommittee Meeting	Victoria
April 19, 2012	Subcommittee Meeting	Victoria
April 26, 2012	Deliberations Adoption of Report	Victoria
May 14, 2012	Subcommittee Meeting	Victoria

How Pesticides are Regulated Today

Overview

The sale and use of pesticides in Canada is regulated by all three levels of government. The federal government evaluates the most up-to-date scientific research and registers only those pesticides that are safe; provincial legislation outlines how pesticides can be applied and by whom; and municipal governments have been given the option to regulate whether pesticides are used on residential and municipal property.

Chart 1: Distribution of Legislative and Regulatory Responsibilities[3]

Federal	Provincial	Municipal
• New pesticide registration and re-evaluation. • Science-based health, environment and value assessments. • Compliance and enforcement. • Development of sustainability strategies.	• Transportation, sale, use, storage and disposal. • Training, verification and licensing. • Further conditions on use, in accordance with federal standards.	• Bylaws for further conditions on use of pesticides, where the authority exists and in accordance with federal standards.

Over the course of its inquiry the Committee learned about the complex regulatory framework governing the registration, sale and use of pesticides and concluded that there is a general lack of understanding among the public of how pesticides in the province are approved for use and regulated. Also, in British Columbia some local governments — in particular, small rural municipalities — do not have the resources to undertake a comprehensive review of the processes involved in registering pesticide products for use in Canada. In order to educate British Columbians about the regulatory responsibilities of each level of government, this section of the report endeavors to explain in some detail the federal regulator's process for registering and re-evaluating pesticides in Canada and outlines the responsibilities of the provincial and municipal governments in the province.

[3] Lindsay Hanson, "Pest Management Regulatory Agency, Federal Pesticide Regulation," PowerPoint Presentation Special Committee on Cosmetic Pesticides, Victoria, BC, October 6, 2011.

Federal Regulation

> *"The federal role is to look at new pesticide registration and the re-evaluation process; … compliance and enforcement; and the development of sustainable strategies with respect to food crop production and also for non-food uses of pesticides."* (Lindsay Hanson, Pest Management Regulatory Agency, Victoria meeting, October 6, 2011)

The *Pest Control Products Act* (PCPA) and regulations are the comprehensive framework legislating pesticides imported into, sold, or used in Canada. Pesticides in Canada are also regulated under a number of different laws including the *Canadian Environmental Protection Act*, the *Food and Drug Act*, and the *Species at Risk Act*.

The existing *Pest Control Products Act* received royal assent on December 12, 2002 and came into force on June 28, 2006. The legislative changes introduced in 2002 were the first major amendments since 1969. The revised law focused on increased transparency, strengthened health and environmental protection and provided more robust post-registration control of pesticides. To achieve these goals the *Act* provides additional protections for children and pregnant women and includes specific safety considerations for pest control products used residentially.

The legislation includes new testing measures to account for pesticide exposure from all sources, including food and water; the introduction of an online public pesticide registry; the opening of a reading room where the public can examine confidential test data; and the establishment of formal public consultation practices. The *Act* also requires that all pest control products be re-evaluated on a 15-year cycle; increases the powers of inspection and fines to ensure compliance; and requires new incident and sales reporting.

The *Pest Control Products Act* is administered by Health Canada's Pesticide Management Regulatory Agency (PMRA). The Agency was created in 1995 with the specific mandate to protect human health, safety and the environment by minimizing risks associated with pesticides. The Agency works with Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, Environment Canada, Fisheries and Oceans Canada and Natural Resource Canada, and with provincial ministries.

The PMRA's main responsibilities include (1) pre-market testing and pesticide registration, (2) setting maximum residue limits for the *Food and Drugs Act*, (3) re-evaluating registered products, and (4) enforcing compliance. The Agency also develops policies on sustainable pest management and provides the public with information on safe pesticide use. Each of the PMRA's main responsibilities is outlined below.

Pre-market Testing and Pesticide Registration

Before a pesticide product can be registered and sold in Canada, the PMRA must determine that it is acceptable in terms of safety, efficacy, and value. (See Chart 2: Steps for the Registration of a Pesticide, page 8) The registrant, typically the manufacturer, is required to submit over 200 toxicology tests and exposure studies that are used by the PMRA to complete health, environmental

and value assessments. The studies submitted are completed by the registrant's own laboratory, or by independent laboratories, all of whom must follow a set of test protocols developed by the Organization for Economic Development (OECD). These international Test Guidelines and Principles of Good Laboratory Practice (GLP) are designed to prevent manipulation and promote the quality and validity of test data. GLP includes standards with regards to the organization process and conditions under which non-clinical studies are planned, performed, monitored, recorded, and reported.

Chart 2: Steps for the Registration of a Pesticide[4]

Submission of the application and data by the applicant
STEP #1 Verification of data by Pest Management Regulatory Agency Has all necessary information been provided?
STEPS #2 & #3 Screening of data and preliminary review by the Agency Does data support claims for effectiveness? Does data meet chemistry requirements? Can the health and environmental risk be evaluated based on data submitted?
STEP #4 Scientific review and risk assessment by the Agency Are the health and environmental risks acceptable? If the risks are unacceptable, can they be mitigated?
STEP #5 Proposed decision by the Agency Should the pesticide be registered, rejected, or granted a conditional registration?
STEP #6 Preparation of the proposed decision about the submission
STEP #7 Public consultation on the proposed decision
STEP #8 Assessment of public comments
STEP #9 Pesticide label review and approval

The PMRA pesticide evaluation processes are consistent with the approach taken by other international regulatory bodies such as the US Environmental Protection Agency (EPA) and use the same risk-assessment paradigm as the European Union. PMRA staff cross-reference the data, check and assess it to make sure it is scientifically sound. In conducting the risk assessment and making registration decisions, the PMRA considers how a pesticide product will be used, possible exposure scenarios, and the level of knowledge the applicator may have.

The PMRA management committee uses registrant-provided toxicological data and, when available, epidemiological literature, to evaluate the human health risks, the environmental risks and the risks arising from occupational and bystander exposure. The PMRA only registers pesticides that complete these health, environment, and value assessments and for which PMRA has "reasonable certainty that no harm to health, future generations and the environment will result from use or exposure when used according to label directions."[5]

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[4] Canada. Office of the Auditor General of Canada. *March Status Report of the Commissioner on the Environment and Sustainable Development, Chapter 2 - Chemicals Management – Pesticide Safety and Accessibility*. Ottawa: Public Works & Government Services Canada, 2008), p. 6. Available online: http://www.oag-bvg.gc.ca/internet/English/parl_cesd_200803_02_e_30128.html

[5] Canada. Parliament. House of Commons. *Pest Control Products Act*. Bill C-8, 37th Parliament, 2nd Session, 2002-2003. (Ottawa: Queens Printer of Canada, 2003) Section 2.

Health and Environment Risk Assessment

The pesticide risk assessment procedure identifies, analyzes, and evaluates the chances of harm or injury to people and to the environment from a given substance. Health and environmental risks are assessed by measuring and analyzing two factors: the inherent toxicity of a pesticide (**hazard**) and the probability of sufficient exposure to elicit an adverse effect (**exposure**). The PMRA's 350 staff scientists use data on the health and environmental hazard and the exposure to answer the question, "What is the risk that exposure to a pesticide will result in harm?"

Health evaluation

An extensive set of toxicology studies, epidemiological information and tests of occupational, bystander, and dietary exposure is used to determine the nature and extent of the human health risk posed by a pest control product. The health evaluation focuses on the interaction between two health-related criteria: hazard and human exposure.

To measure the **hazard** of a product the PMRA uses animal tests to examine the effects of a single dose, the effects of short-term exposure, and the effects of long-term and life-time exposure. Tests include analysis of reproductive effects of a pesticide over two generations, measurement of the cancer potential of a pesticide and examine how pesticides are absorbed through the body, how chemicals affect nervous tissue and how chemicals could affect immune function. Studies are also done to understand the possible mechanisms by which pesticides might have carcinogenic effects and to assess the potential effects of pesticide exposure in utero and during early life on the developing nervous system.

In order to accurately estimate the amount of pesticide Canadians may be exposed to through their diet and other activities, PMRA scientists review a number of studies on **exposure.** The assessments examine all sources and routes of potential exposure (oral, dermal and inhalation) and take into account various occupational, residential, and bystander pesticide-use scenarios. Exposure studies also specifically consider the differing behaviours and biology of sensitive populations including infants, toddlers, children, adolescents, and pregnant women. One scenario the PMRA accounts for in their analysis is infants or children playing on a treated lawn or playing field.

To judge the risk of a pesticide product the PMRA integrates information on the toxicity of a product with information gathered on likely exposure levels. Studies on pesticide toxicity are used to identify the product dose that causes no adverse effects on the most sensitive species used for testing. This dose is referred to as the "No Observed Adverse Effect Level," or NOAEL, and is used to calculate and predict the level of exposure at which there will likely be no harmful effects to humans — the "Reference Dose". The Reference Dose is calculated by applying uncertainty factors, typically of 100 to 1000 fold, to the NOAEL to take into account differences between species and differences between humans. The Reference Dose is always less than 1/100th of the level of pesticide that causes effects on the most sensitive species. Additional safety factors are applied to address sensitive sub-populations and uncertainties about the precision of toxicology and exposure data.

Once the Reference Dose is calculated, it is compared to the expected level of human exposure generated by the slate of exposure studies. Only pesticides where the reference dose is below the expected level of exposure are considered appropriate for registration.

Environmental evaluation

Much like the health assessment, the environmental risk of a pesticide is a function of two factors: the environmental chemistry and toxicology of a product (**hazard**) and what happens to a product once it enters the environment (**exposure**). The testing of both environmental hazard and exposure is challenging because it requires identification of possible toxic effects on a vast number of organisms, species, ecosystems and food chains. The testing must also consider both local effects of pesticides and the potential effects resulting from pesticide movement.

Environmental toxicology studies of a product reveal the **hazards** posed by a pesticide to non-target land and water organisms. A pesticide manufacturer must provide lab and field data on the acute, short- and long-term effects of their product on mammals, birds, invertebrates, insects, and plants, as well as results of acute and chronic oral and dietary tests and reproductive and genotoxicology tests. Acute and chronic-toxicity testing is also required on cold and warm water fish, aquatic arthropods, aquatic plants and, when relevant, on marine fish and mollusks.

Study of the environmental fate (**exposure**) of a pesticide allows for an understanding of the chemical properties of a pesticide, its transformation processes and what happens to a pesticide once it enters the environment. Lab and field studies of environmental fate reveal how a pesticide acts in air, soil and water and how pesticides are processed by plants and animals. Testing is also done to understand the product's potential for bioaccumulation in organisms and how pesticides move through soils and water. Testing of environmental fate is not required when environmental toxicity tests indicate that the product presents minimal environmental concern.

Mandatory field tests in specific Canadian climate zones are completed in a range of standard test organisms to determine the effects of pesticides. Internationally recognized indicator species are used to measure the potential effects of pesticides on terrestrial and aquatic non-target flora and fauna.

Data on the environmental hazard of a pesticide is used to determine a No Observe Effect Concentration (NOEC). Similar to the case of human health effects, the NOEC is compared to expected environmental concentrations. Only pesticides where expected exposure levels are much below the No Observed Effect Concentration are considered for registration.

Value assessment

The value assessment of a pesticide ensures that only products that make a positive contribution to pest management are registered. The process includes three components: efficacy testing, analysis of the economic benefits and competitiveness of a product, and consideration of how the product affects the PMRA's goal of sustainable pesticide use.

Efficacy assessments help to protect users from deceptive claims while also examining whether a product improves crop yields or reduces pest damage. The efficacy evaluation includes field and laboratory testing to determine if the label claims and the application directions provide reliable pest control without damaging non-target organisms.

The economic and competitiveness component evaluates the possible economic impacts of adding a new product to the market. The testing predicts the impact a new pesticide would have on the competitiveness and trade of Canadian goods and compares the value of pest reduction with the cost of proposed risk mitigation strategies. More studies are conducted when aggressive risk management options are developed or when the commodity being protected is of high value.

Analysis of a product's sustainability focuses on its compatibility with the PMRA's goals of sustainable agriculture production and use of integrated pest management strategies. New pesticide products are compared to other products to determine how an additional product will affect risk reduction. New products are evaluated based on their possible impact on the management of pesticide resistance.

The value assessment contributes to lower overall risk levels and increased sustainability by working to eliminate high-use rates, by ensuring practical risk mitigation strategies, and by minimizing the negative impacts of pesticide products.

Registration decisions and risk management

The health, environment, and value assessments provide a factual and contextual basis for making registration decisions. Once the assessments are complete, the product's risk management options are identified and analyzed. Regulators consider the range of options available to reduce human and environmental exposures. Among possible strategies are restrictions on use, permit requirements, or specific application techniques and protective equipment requirements. The analysis of risk management options is a dynamic process that includes recalculation of risks under different proposed mitigation strategies. Risk mitigation strategies are constrained by legal and practical enforcement considerations.

Only when there is sufficient evidence to show that a product does not pose unacceptable health or environmental risks and has a value will it be registered and receive a pest control number. Following a risk assessment, pesticides in Canada are classified based on their intended use in one of three categories: Restricted, Commercial or Domestic. Pesticides are registered with specific and legally binding conditions on the label. Any use of a pesticide not according to the label is a legal offence.

Maximum Residue Limits

The PMRA uses information gathered during its health and environmental risk assessments to set maximum residue limits (MRLs) in accordance with the *Food and Drugs Act*. The limits set for each pesticide/crop combination are set at levels well below the amount that could pose a health concern.

If it is determined that an unacceptable risk exists, the pesticide product will not be permitted for sale or use in Canada.

Pesticide Re-evaluation

In addition to assessing and registering pesticides, the PMRA is also responsible for the re-evaluation of pesticide products. The *Pest Control Products Act* requires that all registered pesticide products be re-evaluated on a 15-year cycle. In 2001 the PMRA launched the "Pest Management Regulatory Agency Re-evaluation Program" to review 401 active ingredients registered before the 1995 creation of the PMRA; as of March 2011, 93% of pesticide products have undergone re-assessment in the last 15 years.

Generally pesticide re-evaluations are completed on a cyclical basis, but re-evaluation or special reviews of a pesticide product can be triggered before a pesticide is due for its 15 year re-evaluation. A re-evaluation is done, for example, if a major study shows an association between cancer risk and a registered product; if other OECD countries de-register a pest product due to health or environmental concerns; or if new scientific information is provided by provinces.

The PMRA can also undertake a special review if an individual provides sufficient scientific evidence demonstrating a need to re-asses a pesticide. The PMRA, for example, re-evaluated 2,4-D over an extended period and concluded that 2,4-D, when used according to label directions, did not pose an unacceptable risk to the environment or public health.

The re-assessment process allows the PMRA to consider pesticides through a modern lens using new scientific knowledge and risk assessment approaches. Like the pre-registration assessment, the re-evaluation examines the health and environmental risks and studies the product's efficiency. When completing a pesticide re-evaluation PMRA staff examines reports of adverse effects, studies epidemiology and toxicology data on the pesticide product, and makes use of data and information available from other regulatory agencies. The Canadian re-evaluation process consults the reports released by other OECD countries and relies heavily on the US EPA's re-evaluation decisions.

Before beginning a pesticide re-evaluation the registrant is contacted and new toxicological and exposure data is requested. In some cases the registrant chooses not to proceed with re-registration and the pesticide is removed from the market.

Once a re-evaluation is complete the PMRA releases a proposed re-evaluation decision that outlines the scientific studies that have been completed and proposes one or more of the following outcomes: leave the registration unchanged; amend the pesticide label to increase safety; change the maximum residue limits; place conditions on the use of the product while new data is made available; or eliminate or phase-out use. The public and stakeholders have an opportunity to provide feedback on the proposed re-evaluation decision for between 60 to 90 days. The PMRA considers any submissions received before issuing a final re-evaluation decision.

If a product re-evaluation results in a pesticide de-registration, the PMRA works with the registrant and stakeholders to develop a phase-out plan. Often the transition plan establishes a last date of retail sale and, a year later, a deadline for use.

Compliance and Enforcement

The Pest Management Regulatory Agency's fourth area of responsibility is monitoring, compliance and enforcement of the *Pest Control Products Act*. Post-registration monitoring is essential to ensuring the continued safety and value of registered pesticides.

There are three elements of post-registration monitoring: enforcement of compliance with the *Act*; routine inspections, monitoring and food residue and health surveys; and the maintenance of a modern database on the potential effects on human health and the environment.

Enforcement and compliance activities are conducted by the PMRA, its regional offices and provincial ministries. Each year the compliance directorate completes about 30 to 40 market surveillance and inspection programs. These are done by choosing a specific crop area, for example blueberry growers, and completing inspections, interviews and sample analysis from a sampling of blueberry farms to ensure that pesticides are being used according to label directions. The compliance arm of the PMRA also undertakes education programs to teach homeowners using pesticides how to read pesticide labels and how to grow a healthy lawn.

Regional offices have a mandate to conduct inspections and investigations and undertake activities like specific marketplace initiatives, analyzing how a product is being used and educating public the on regulatory requirements. Enforcement measures are taken when non-compliance is detected. The *Act* provides the authority to issue fines or penalties when pesticide applicators disregard the label instructions.

The PMRA works with provincial ministries and other federal departments to promote and assure compliance with the PCPA. The Federal-Provincial-Territorial Committee on Pesticide Management and Pesticides includes regulatory officials from each province and the federal government who come together to discuss pesticide issues and potential problems with products or with pesticide use. Compliance staff is informed of any issues raised at these meetings.

Secondly, the PMRA works with Health Canada's Health Protection Branch and with the Canadian Food Inspection Agency to complete targeted research and monitoring activities to ensure the continued safety of food products grown and imported into Canada.

The third responsibility is the monitoring of pesticide incident reports. The *Pest Control Products Act* requires that any incident, whether human or environmental, be reported by the product registrant to the PMRA. The Agency compiles data on these incidents to identify and act on any trends that develop.

Provincial Regulation

Once Health Canada approves a pesticide for sale and use in Canada, the ten provinces can regulate the sale, use, storage, transportation and disposal of registered pesticides products so long as the provincial regulations are consistent with the federal legislation.

Since 2003, seven Canadian provinces have introduced legislation or changes to regulation limiting the sale and use of some pesticide products. Québec was the first to phase in a ban on the cosmetic use of pesticides beginning in 2003; and since then Ontario, Alberta, Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador have followed suit. In spring 2012 Manitoba plans to release a discussion paper exploring how a ban may work. The provinces' experiences with bans are discussed in more detail on pages 38-46.

British Columbia

> *"The province regulates how the products are used, when and where pesticide use is appropriate and how that will be carried out."* (Daphne Dolhaine, Ministry of Environment, Victoria meeting, August 22, 2011)

In British Columbia the sale and use of pesticides are regulated by the *Integrated Pest Management Act* and Regulation. The *Act* came into effect on December 31, 2004 and is administered by the Ministry of Environment. The *Act*'s two main functions are to regulate the sale, use and handling of pesticides and to promote an integrated pest management (IPM) approach to pest management.

The sale, use and handling of pesticides

BC's *Integrated Pest Management Act* requires that all pesticides be used according to their federally determined labels, and that no person shall use, transport, store, dispose of or sell a pesticide in a way likely to cause adverse effects to human health and the environment. The *Act* and Regulation use a pesticide classification system and a matrix of licences, certification, permits, and pest management plans to outline the various conditions for the sale and use of pesticides. For example, the Regulation prescribes three categories of licences: pesticide vendor; pesticide user service; and pesticide user non-service.

The *Act* does not require homeowners to use IPM when applying pesticides in and around private residences and gardens. However, pesticides used on public land, private forest land, multi-resident dwellings, and pesticides applied as a service must be applied under the supervision of a certified pesticide applicator and as part of an integrated pest management program. Pesticide application by landowners to private land is not regulated beyond the federal requirement that label directions be obeyed.

The IPMA requires that pesticide vendors in British Columbia keep records of certain pesticide sales, and that retailers have certified pesticide dispensers on staff to inform pesticide purchasers of the label directions and to provide advice about pesticide management. Pesticide dispenser certifications are

available for domestic or commercial dispensers and are issued upon completion of a provincially-managed exam.

The *Act* and Regulation classify pesticides in five categories and use these classes to distinguish the licences, certification, permits, and pesticide-use notifications necessary for use of each pesticide. The five provincial classes and their requirements are:

- permit-restricted pesticides require a provincially-issued permit and a pesticide applicator certificate for purchase and application,
- restricted pesticides require a pesticide applicator certificate to be purchased or used,
- commercial pesticides are suitable only for industrial, commercial or agricultural uses but do not require an applicator certificate to purchase,
- domestic pesticides are intended for purchase and use by non-professionals and are designed for use in or around private residences and gardens, and
- excluded pesticides do not require a licence, certificate or permit for sale and use.

"Permit-restricted" and "excluded" products are identified in Schedule 1 and 2, respectively, of the IPMA. "Excluded" pesticides are products like laundry additives, pool chemicals and garden acetic acid and are included based on the manner they are currently used. The remaining three designations are definitions set out in the federal *Pest Control Products Act*. Domestic-class pesticides often contain the same active ingredients as Commercial-class pesticides, but in more diluted forms.

Pesticides classified as permit-restricted or restricted must be applied by certified pesticide applicators. British Columbians can become certified pesticide applicators by studying material provided by the Ministry of Environment and by completing an exam. 16 possible certifications exist, including specific certifications for agriculture, forestry and landscaping. Re-certification can occur by re-writing the exam or by completing 20 hours of training over 5 years.

Integrated pest management approach

The passage of the IPMA made BC the first jurisdiction in North America to require the use of integrated pest management (IPM) on all public land and by certified pesticide applicators. According to the *Act* only pesticides included in Schedule 2 may be applied to public land without an applicator certificate or a licence. Use of all other pesticides is prohibited on public spaces such as schools, municipal, and playing fields open to the public, except where IPM plans are in place and pesticides are applied by certified applicators.

IPM is a decision-making process that works to suppress pest populations in effective, economical, and environmentally sound ways. It is a process for planning and managing location-specific prevention and intervention strategies against pest problems. IPM includes six elements:

- Planning to prevent pests;
- Correctly identifying pests and their damage;

- Monitoring populations of pests, damage levels, and environmental impact;
- Making control decisions by weighing damage, costs, and impacts on other plants and pests;
- Using pest management strategies that combine manual, behavioural, biological, chemical, and cultural practices to reduce pest populations; and
- Evaluating the effects of pest management decisions.

IPM takes into account the goals and preferences of each particular pest management context. Well-designed programs emphasize making changes to plant management to prevent pest problems.

According to the IPMA and Regulation, pesticides used on public land (e.g. schools, playgrounds, parks), private land used for forestry, transportation corridors, public utilities and pipelines, and pesticides used as part of pest control services must be applied as part of an IPM approach and under the direct supervision of a certified pesticide applicator. Pesticides can only be used when the IPM program determines their use critical to control a pest or when no alternative pest management strategies exist. The *Act* also requires that notification signs be posted when pesticides are used on public land or multi-residence properties.

The *Act* requires that large-scale pesticide application operate according to a Pest Management Plan (PMP). The development of PMPs must include public consultation with organizations and individuals potentially impacted by the PMP. The plans approved by the Ministry of Environment are subject to notification requirements such as posting of signs and direct notification. Applicators are required to submit an annual summary of pesticide use to the Ministry.

Ministry-designated inspectors have the authority to audit and enforce provisions of the *Act*. The Ministry of Environment's compliance framework uses escalating responses to pesticide regulation infractions including tickets and suspensions or revocation of authorizations. The Ministry issues a non-compliance letter for the first infraction and generally issues a ticket on the second failure to comply with regulations. If the ticket is disputed the infraction could lead to a court case.

Municipal Regulation

> *"Generally speaking, local governments are able to regulate the when, where and why of pesticide application."* (Rhona Martin, Union of BC Municipalities, Vancouver meeting, December 8, 2011)

In British Columbia municipal authority to create pesticide bylaws comes from Section 9 of the *Community Charter* that establishes concurrent regulatory authority in five spheres where municipalities and the province share a regulatory interest. Two of these spheres affect the regulation of pesticides: protection of the natural environment, and public health.

The specific regulatory powers of municipal governments are laid out in Regulation 144/2004 *Spheres of Concurrent Jurisdiction – Environment and Wildlife Regulation;* the 2004 Consultation Agreement

between the Ministry of Water, Land, and Air Protection, Ministry of Community, Aboriginal and Women's Services and the Union of BC Municipalities; and the 2004 Consultation Agreement on Public Health.

These documents establish that municipalities, but not regional districts, may enact bylaws that restrict pesticide use on outdoor trees, shrubs, flowers and ornamental plants and turf on private residential and municipal lands. The regulations indicate that municipalities may not enact legislation that affects pesticide application for the management of pests that transmit human diseases or that restricts pesticide application on land used for agriculture, forestry, transportation, and public utilities or pipelines not vested in the municipality. Municipal bylaws are not applicable to residential areas of farms or to structural pesticide application. Pesticide use bylaws may not be created if they contradict, or are less stringent than, provincial or federal health legislation.

As of May 2012, 40 municipalities in British Columbia have enacted bylaws to restrict pesticide use on outdoor trees, shrubs, and flowers on residential or municipal land. (See Appendix C: Local Pesticide Bylaws in Force in BC) Of the 40 bylaws, 27 ban the use of all pesticides with exception of the "Excluded pesticides" listed in Schedule 2 of the *Integrated Pest Management Act* regulation. Thirteen municipalities have developed their own pesticide exemptions. Eighteen municipalities include a permit process wherein residents can apply to the municipality to obtain a permission to use pesticides. The existing patchwork of bylaws applies to nearly 60 percent of British Columbians.

Differing Perspectives on a BC Ban

Over the course of its inquiry the Committee heard a diversity of opinions on a possible ban on the cosmetic use of pesticides. Submissions and arguments for and against a ban focused on four themes:

- the safety of pesticides, particularly their health and environmental effects;
- the use of pesticides in residential and industrial settings;
- the effectiveness of the federal regulatory system; and
- the adequacy of existing provincial pesticide legislation.

This section of the report will present the differing perspectives the Committee heard on each of these themes.

Safety of Pesticides

Much of the input to the Committee focused on the safety of pesticide use. The Committee heard presentations from a variety of organizations and received submissions from numerous individuals arguing that pesticides are not safe, but are harmful to human health and the natural environment. Written submissions from the pesticides industry and briefings from the PMRA countered these claims arguing that pesticides available in Canada are subject to a rigorous scientific testing process and are safe if used according to the label directions. The Committee also received submissions stressing the health, economic, and environmental benefits of a healthy lawn. Summaries of these diverse perspectives on the safety of pesticides are presented below.

Health Effects of Pesticides

Pesticides are harmful to human health, especially children's health

Presenters and submitters to the Committee cited a long list of scientific studies that claim to demonstrate associations between pesticide use and higher levels of cancers and developmental disorders. Advocates pointed to recent research findings in the field of epidemiology that identify a number of health concerns associated with pesticide exposure, including an increased risk of a number of cancers, particularly childhood cancers; an association with autism; and with reproductive effects.

This theme of harmful health effects was the focus of the presentations of Dr. Bruce Lanphear (SFU Faculty of Health Sciences) and Dr. Cathy Vakil (Canadian Association of Physicians for the Environment) who both argued that the scientific evidence suggests there is no safe level of exposure to pesticides for children or pregnant women.

Some national health organizations based in Ontario voiced similar concerns about the potential health effects, claiming that children are more vulnerable to exposure to pesticide-treated lawns and playgrounds due to their developing immune systems. These organizations included the Canadian

Paediatric Society, the Canadian Partnership for Children's Health and Environment, the Centre for Environmental Health Equity, Prevent Cancer Now, and Physicians for Global Survival.

E-consultation participants expressed their concerns like this:

> *"There is a large body of medical evidence demonstrating pesticide-associated health risks, affecting everyone from the fetus to seniors.... Potential health risks of cosmetic pesticides outweigh any benefits."* (Adrian Behennah, Victoria, Written submission 8239)

> *"There is a growing body of scientific evidence that links cancer to the use of pesticides, including childhood cancers. Given that there are a number of alternatives to using pesticides, banning the use of cosmetic pesticides would be an important first step in terms of public safety and health."* (Jeannine Istvanffy, Vancouver, E-questionnaire 8102)

Some submitters criticized the PMRA pesticide registration assessment for failing to adequately consider and act on epidemiological studies and data. Dr. Bruce Lanphear, for example, emphasized in his November 7, 2011 presentation to the Committee that "disease and disability associated with environmental chemicals are preventable," and that, based on the evidence currently available, action can be taken to prevent these health challenges.

Many of the submissions that highlighted the possible negative effects of pesticides recommended the provincial government enact a ban on the cosmetic use of pesticides. The Canadian Breast Cancer Foundation, the Canadian Cancer Society – BC and Yukon Division and 20 other health and environmental organizations submitted a joint statement calling for a province-wide ban on lawn and garden pesticides in BC. The November 2011 statement submitted by the 22 organizations called for new legislation that:

- *Prohibits the use, sale, and retail display of chemical pesticides for lawns, gardens, and non-agricultural landscaping;*
- *Allows exemptions only to protect public health;*
- *Provides for public education about the ban and alternatives to chemical pesticides;*
- *Includes effective mechanisms for enforcement;*
- *Is passed and implemented within the current government's mandate.*

Pesticide products for sale in Canada are safe

However, the claims of health advocates that pesticides are not safe were not accepted by many individuals, groups and businesses. The Committee heard from a number of pesticide manufacturers and individuals who expressed confidence that pesticides available for use in Canada are safe because they are subject to comprehensive testing processes by the PMRA. For example, for the Manager of Pesticide Regulations for SC Johnson and Son Ltd., "public concerns regarding the safety of these products often result from an inadequate understanding of the rigorous registration process that is currently in place." (Written submission 8424)

Representatives from pesticide manufacturers and individual submitters emphasized that Canada has a rigorous and internationally recognized pesticide regulatory system and that pesticides can be safely used. Here is a sample of what they said:

> *"The [PMRA] is recognized worldwide as a leader in the area of pesticide regulation. Canada has the most modern Federal pesticide regulatory systems in the world."* (Bayer Environmental Science – Canada, Written submission 8441)

> *"The Pest Management Regulatory Agency under Health Canada is the expert authority in pesticide chemistry, the sale of pesticide, and their efficacious use. This agency, in my opinion, is probably the strictest of any regulatory body in the world."* (Harv Chapple, Westbank, Written submission 1410)

Hearing criticisms that the PMRA does not adequately consider epidemiological tests that demonstrate a link between pesticides and adverse health effects, the Committee inquired about the role of epidemiological information in the PMRA's pesticide assessment and re-evaluation processes. At the January 17, 2012 meeting PMRA officials explained that their Agency's scientists are aware of epidemiological reports and public literature and that in completing pesticide re-evaluations PMRA scientists look specifically for epidemiological reports for products that are registered in Canada. Unless a pesticide has been registered for a long time in another country, epidemiology reports and data are generally not available for consideration until after the initial registration of a pesticide.

The PMRA informed the Committee that epidemiological studies uncover correlations between pesticide exposure and harmful health impacts but do not reveal direct causal relationships between pesticide use and negative health outcomes. In follow up information provided to the Committee the Agency explained that "confounding factors make it very difficult to use epidemiology studies to either establish or definitively rule out links between pesticides exposures and effects." For example, "other chemical or physical environment effects are usually encountered at the same time as pesticide exposures," affect the result. Before registering a pesticide or making registration changes the Agency examines correlations revealed in epidemiological studies in conjunction with toxicological data to determine whether the proposed correlation is biologically possible.

Environmental Impacts of Pesticides

Pesticide use is harmful to the natural environment

Many submitters were concerned about the environmental impacts of pesticides as well as their effects on human health. Environmental organizations involved with protecting wild spaces, wetlands, the marine environment and wildlife in the province. Organizations believe the use of pesticides is harmful to the natural environment and therefore encouraged the Committee to recommend a province-wide ban on the cosmetic use of pesticides. Representatives of organic agriculture articulated a similar theme, and a few beekeepers suggested the use of pesticides was a contributing factor in the decline of honey bee and other pollinator populations.

Environmentalists in support of a ban on the cosmetic use of pesticides focused on the fact that pesticide use can result in significant harm to species and ecosystems, and that pesticides or their derivatives may persist in the environment and cause unintended damage. They cited research in the field of environmental studies that has revealed pesticide residues in air, soil and water. These potentially harmful residues often come from the air-borne dispersal of pesticides, particularly from the spraying of large areas of agricultural and forest lands and from soil contamination and rainfall runoff.

Another concern of environmentalists is that the toxic effects of pesticides can extend beyond the target pest. These submitters explained that the toxic effects of pesticides affect non-target species either through direct exposure to pest control products, or through animals feeding on pesticide-exposed organisms. They postulate that pesticide exposure can lead to higher concentrations of toxins occurring higher up the food chain.

The Georgia Strait Alliance, a provincial organization with the mandate to protect and restore the marine environment and promote the sustainability of the Strait of Georgia, expressed concern that pesticide runoff enters waterways and jeopardizes the health of aquatic ecosystems and commercially important fish stocks – a concern echoed by the Denman Island Forage Fish Group. In a written submission the Association of Wetland Stewards for Clayoquot and Barkley Sounds pointed out that while most pesticide product labels include instructions not to use near water, wildlife toxicology studies indicate that pesticides reach streams and wetlands where they can kill fish, cause deformities in amphibian species and upset the ecosystem.

Many local governments in BC also perceive pesticide use as a threat to the natural environment and regard a provincial ban as another tool that they could use prevent water and soil contamination. As well, they are receptive to the argument that there is a perceived risk to health and public safety, particularly for children and pets exposed to pesticides on residential lawns and at public parks.

At the November 8, 2011 Vancouver meeting, the Chair of the UBCM Environment Committee reported that in response to their residents' growing concerns about environmental and health risks, around 37 local governments had enacted bylaws restricting pesticide use by November 2011. UBCM members also passed resolutions at their annual conventions in 2008 and 2010 calling for the enactment of "provincial legislation that will ban the sale and use of cosmetic pesticides province-wide." The Committee also received submissions from 13 local governments, including the City of Richmond and the City of Victoria, expressing support for a provincial ban on the cosmetic use of pesticides. Submissions from three other municipalities, though, expressed reservations about a ban.

Pesticide use produces healthy lawns and gardens

However, the Committee heard another perspective on the environmental impacts of pesticides. Submissions from pesticide manufacturers and industrial users stressed the important environmental benefits that result from maintaining healthy lawns and gardens.

At a Vancouver meeting, CropLife Canada, a trade association representing manufacturers, developers and distributors of pesticide products, described its products as "safe, effective tools for public and private spaces" and as "valuable tools that contribute to improved health and a better environment." Bayer Environmental Science – Canada explained in its written submission that healthy lawns play a number of important environmental roles: lawns sequester carbon and turn it into oxygen through a process of photosynthesis; healthy turf helps to trap, hold and cleanse water that may be entering the ground; and turf provides a cooling effect through evapotranspiration.

The Integrated Environmental Plant Management Association of Western Canada (IEPMA) noted in its November 8, 2011 presentation that in addition to reducing noise pollution attractive landscapes "are pleasing to the eye and make us feel good." The Committee also heard that residential property values are linked to the general appearance of properties, including lawns and gardens.

Use of Pesticides

Another stream of input focused on the use of pesticides. Some submissions debated the necessity of Domestic-class pesticide use in residential settings while others focused on the value of Commercial-class pesticides for various BC industries.

Residential Settings

Presenters and participants in the e-consultation had differing perspectives on the need to use Domestic-class pesticides for lawn and garden care. Some submitters argued that Domestic-class pesticides are unnecessary for lawn and garden care since, in their view, alternatives are available. Others stressed how important pesticides are for the control of invasive plants and pests.

Alternatives to Domestic-class pesticides are available for lawns and gardens

The Committee heard from health and environmental groups, individuals and organic gardeners that the use of pesticides on residential property is unnecessary. Two presentations were representative of this perspective. The Certified Organic Associations of BC argued that synthetic pesticides could be replaced, both in residential and industrial settings, by a combination of cultural practices and "biopesticides." Another presenter, Douglas Justice explained to the Committee how the UBC Botanical Garden successfully transitioned from the use of chemical pesticides to the use of better cultural practices and approved organic products.

Written submissions from two lawn care businesses also emphasized how they have been successful in maintaining healthy lawns and landscapes without the use of chemical pesticides. For the owner and operator of Nechako Natural Lawn Care, "healthy lawns and gardens require a balance of nutrients and pesticide-free treatments.... One can achieve a great lawn without the use of cosmetic pesticides."(Written submission 3375) The owner of Edibella Organic Landscapes stated, "there is a dynamic emerging market for organic landscape businesses across BC" and encouraged the Committee to recommend a ban similar to those in Ontario and Nova Scotia. (Written submission 4875)

Domestic-class pesticides are essential tools to maintain urban residential landscapes

The Committee also heard from representatives from the nursery and landscaping industry and from lawn and garden care businesses who argued that pest control products are effective and useful tools for protecting people and property against insects, weeds, and disease. Some also argued that there are not adequate alternative low-toxicity products available to homeowners and that alternate lawn and garden pest control practices are more expensive.

The nursery industry, which accounts for almost 5 percent of provincial farm receipts in British Columbia, grows a wide variety of plants, and many diseases and harmful insects can affect these plants.[6] The BC Landscape and Nursery Association (BCLNA) represents over 700 nursery growers, landscapers and garden retailers in the province. In its presentation to the Committee the BCLNA stressed that in order to care for green spaces, protect plant health, and combat the spread of invasive species, landscapers and nursery owners must continue to have access to all pest control methods. From the industry's perspective, applying pesticides to keep urban forests and green spaces healthy is not cosmetic use. The BCLNA also expressed concern about the misuse of pesticides by uneducated homeowners and support for the retail pharmacy model for the sale of pest control products.

Submissions from lawn and garden care businesses noted that individuals who hire companies to apply pesticides on lawns and gardens do so for a variety of reasons including medical conditions such as allergies, to protect property investment, or because they get joy from having a well-kept green space. The operators of one business called on the Committee to not consider the use of pesticides on lawns and gardens as "cosmetic," and requested a, "clear and decisive recommendation from this committee that pesticides have value and their use in the urban landscape will continue." (Paul and Mance Visentin, The Kootenay Lawn Doctor Inc., Written submission 5802)

Some submissions to the Committee noted that a possible ban on the cosmetic use of pesticides could cause unnecessary hardship and possible bankruptcy to businesses and noted that municipal bylaws have already negatively affected their businesses. Concerns were also raised that additional restrictions could further stigmatize the use of chemicals in all sectors; create public hysteria surrounding pesticide use; and promote cross-border shopping.

Another submission from CropHealth, a Kelowna-based consulting company, noted that the horticulture industry is under scrutiny over the use of pesticides, especially in urban areas because, in this company's view, it often fails to use these products responsibly and safely. The CropHealth submission recommended specific changes to the current legislation and remarked on the need to encourage more training in the use of IPM practices and non-pesticide methods that may be effective in commercial programs.

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[6] BC Agriculture in the Classroom Foundation. *Grow BC, a Teacher's Handbook on BC's Agriculture, Fish and Food Business.* (Gabriola: Pacific Edge Publishing, 1998), p.120-121.

Use of pesticides is necessary to prevent the spread of invasive plants

Another perspective presented to the Committee centered on the importance of pesticides for the management of invasive species. In its October 26, 2011 presentation to the Committee, the Invasive Plant Council of BC argued that integrated pest management strategies to tackle non-native species that arrive without any natural predators must include pesticides as a treatment option. Without a strategy that includes the option of pesticide use, non-native species can grow aggressively, spread from urban and residential properties to agricultural and range settings, cause considerable economic and environmental damage, and have social and health impacts.

As invasive plants do not respect property boundaries, the Invasive Plant Council of BC, as well as four regional councils, urged the Committee to consider all uses of pesticide to address invasive plants as non-cosmetic. They also encouraged the Committee not to recommend restrictions based on land tenure. Residential properties in rural communities can require different pesticide management techniques than those used for small backyards in urban areas.

Industrial Settings

The Committee heard from four business sectors, each emphasizing the value and necessity of pesticides, making a case for an exemption from a possible province-wide ban, and arguing that a ban of the cosmetic use of pesticides could harm their sectors.

Pesticide use is necessary for the survival of a number of natural resource and business sectors in British Columbia

Agriculture

The Committee heard a presentation from the BC Agriculture Council (BCAC), which represents the third largest resource sector in the province. The BCAC Chair acknowledged that it is not directly under the purview of the Council to comment on the cosmetic use of pesticides in residential areas. However, the Council felt it was critical that the Committee take into full consideration the impacts any changes it recommends could have on the agriculture industry. Any proposal to limit or ban the use of pesticides for cosmetic purposes must fully consider the potential limitations it imposes on the industry's ability to control weeds, pests and plant diseases. A weed or pest problem spreading from a residential property, for example, to an apple orchard, could have serious economic consequences. The BC Fruit Growers' Association echoed the BCAC sentiment, stating that, "it is vital that any legislation does not impair the ability of citizens, businesses or commodity groups from protecting their ornamental and commercial plantings from newly introduced invasive species." (Hugh Philip, Written Submission 4095)

Forestry

The Committee received a written submission from the Council of Forest Industries, which describes itself as "the voice of the BC interior forest industry". From the Council's perspective, pesticides are

regulated sufficiently, and not only subject to extensive testing but also to further scrutiny when application permits are issued. The submission also described how pesticides are used in various locations: in nurseries, seed orchards, mill yards and in the forests to maintain road right-of ways, to limit the spread of invasive weeds, to control insect outbreaks, to assist in the establishment of new forests, and to protect existing forests and rangeland. The Council expressed concerns that a ban on the cosmetic use of pesticides "represents the first step of a much larger initiative aimed at banning pesticide use altogether. If successful, such action would have devastating consequences for not only the forest sector, but the province as a whole." (Archie MacDonald, Written submission 8278)

Industrial users

The Committee heard presentations from three organizations representing industrial users of pesticides. They shared the perspective that pesticides play an important role in their work and should not be banned. The Integrated Vegetation Management Association (IVMA) of British Columbia represents the industrial users of herbicides in BC: forestry, highways and railways, electrical utilities, oil and gas utilities, noxious weed control, contractors and suppliers, nurseries and agriculture. It argued that application of herbicides is the only effective method to maintain industrial sites weed-free and safe. Mechanical treatments like hand-pulling and steaming do not eliminate deciduous vegetation or control the spread of some invasive weeds. Therefore the IVMA urged the Committee to give full consideration to the ramifications new regulations related to pesticide use could have on the vegetation management industry and in particular expressed concern that the undefined term "cosmetic use" leads to the stigmatization of herbicides and is subjective.

The Integrated Environmental Plant Management Association of Western Canada, which represents professional certified pesticide applicators, and the BC Business Council, representing 260 large/medium-sized enterprises, supported the use of pesticides under the existing guidelines of Health Canada's Pest Management Regulatory Agency and *BC's Integrated Pest Management Act* and regulations. They do not support further restrictions and believe that pesticides are necessary and safe tools for homeowners and companies.

In the event that the Committee decides to recommend additional restrictions, the BC Business Council proposed that: all the costs and benefits be weighed; consideration be given to whether the term "cosmetic" is appropriate for legislation; exemptions be made for non-cosmetic industrial pesticide uses; and a coherent set of province-wide rules be implemented with somewhat different treatment for rural and urban settings.

Golf industry

The golf industry was an active participant in the e-consultation. National umbrella organizations representing different sectors of the golf industry including golf course owners, golf course managers and superintendents and over 90 BC golf courses and golf organizations made submissions to the Committee. The Committee heard that pesticides are a necessity and that any further restriction on their use will have a negative impact on the golf courses as viable businesses and tourism destinations.

The National Allied Golf Association – BC Chapter (NAGA-BC), for example informed the Committee that the BC industry is opposed to further restrictive legislation dealing with pesticides partly because it does not distinguish between cosmetic and non-cosmetic uses. NAGA-BC also explained that as a conscientious environmental steward, the industry continues to look for more effective methods of maintaining greens while reducing chemical controls, because it makes economic sense and is good for the environment. The Committee also received a written submission from the Canadian Golf Superintendents Association (CGSA) that encouraged the Committee to consider that golf facilities are not engaged in cosmetic pesticide use and stressed that greens, fairways, and rough are necessary to the game and to the business of golf.

These organizations and others informed that Committee that without the use of fungicides, playing surfaces would be destroyed by snow mold. This would not only burden courses with the cost of replacing affected turf but also dramatically shorten the playing season. The Committee heard that if courses were not allowed to use pesticides, deteriorating conditions would drive many of their customers to Alberta and the US.

The CGSA made a number of recommendations for any legislative package including that legislative changes not restrict product availability and be phased in over a minimum period of three years; and that legislation should restrict municipalities from passing legislation related to pesticide use and deem any existing bylaws to be of no force and effect.

Federal Pesticide Regulation

A third major theme in the submissions made to the Committee was discussions of whether the existing federal pesticide registration processes are adequate. Submitters contended that the federal Pest Management Regulatory Agency fails to protect Canadians for four reasons: because the testing processes are incomplete, because the precautionary principle is not adequately applied, because pesticide labelling is flawed, and because the Agency is a captive of pesticide manufacturers. PMRA officials responded to these criticisms by explaining testing, labelling and data requirements in some detail. Each critique and the PMRA response are presented below. (See pages 6-13 for a comprehensive explanation of the PMRA's pesticide registration processes)

Precautionary Principle

The precautionary principle is a precept based on the idea that, "if the costs of current activities are uncertain but are potentially high and irreversible then society should take action before the uncertainty is resolved."[7] Precise understandings of the principle vary between jurisdictions but a generally accepted definition is Principle 15 of the United Nations Environment Programme 1992 Rio Declaration on Environment and Development. The Rio Declaration definition reads: "where

[7] "precautionary principle." *A Dictionary of Environment and Conservation.* Chris Park. (Oxford: Oxford University Press, 2007), *Oxford Reference Online.*

there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[8]

Some written and video submissions and responses to e-questionnaires encouraged the Committee to recommend a more strict application of the precautionary principle by banning the cosmetic use of pesticides. Presentations from the PMRA and written submissions remarked that the current federal regulatory framework includes the precautionary principle and already applies precaution.

More stringent application of the precautionary principle is necessary

Some proponents of a BC ban on the cosmetic use of pesticides argued that the current pesticide legislation and registration processes fail to protect British Columbians and the environment from the negative effects of pesticides. Individuals and groups, including the Certified Organic Associations of BC and the Surrey/White Rock Pesticide-Free Coalition, urged the Committee to recommend the application of the precautionary principle which, from their perspective, requires a province-wide ban on the cosmetic use of pesticides. Individual British Columbians expressed their support for a more aggressive application of the precautionary principle in the following ways:

> *"In keeping with the precautionary principle and being better off safe than sorry, the need for provincial legislation to ban cosmetic pesticides is overdue."* (Margaret Jones-Bricker, Prince George, Written submission 1701)

> *"The precautionary principle should apply first and foremost."* (Donald C. Stewart, Victoria, E-questionnaire 3076)

As well, at the November 8, 2011 meeting in Vancouver, Chris Tollefson of the Environmental Law Centre at the University of Victoria contended that the precautionary principle has been increasingly incorporated into international statute law and is on its way to becoming a principle of domestic common law. At the same meeting Lisa Gue of the David Suzuki Foundation stated that "provincial policy should be firmly rooted in the precautionary principle, and this should be clearly articulated as the guiding principle in the policy rationale."

The precautionary principle is already included in federal pesticide legislation and in the work of the PMRA

However, the PMRA informed the Committee that its pesticide regulatory processes already sufficiently incorporate the precautionary principle and precautionary approaches and that suggestions that the principle is not applied are misunderstandings. In response to Members' questions about the application of the precautionary principle, the PMRA reiterated that the Agency's "primary objective is to prevent unacceptable risks to people and the environment in the use of pest control products." (Victoria, January 17, 2012) At the same Victoria meeting, the PMRA

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[8] United Nations General Assembly, *Report of the UN Conference on Environment and Development, Annex 1: Rio Declaration on Environment and Development.* Adopted June 14, 1992, A/CONF.151/26 (Vol. 1) (1992). Available at: http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm

explained that the precautionary principle is referenced in the *Pest Control Products Act*, adding that it is a process that basically winds its way through their evaluation process by way of the scientific evaluation that is carried out.

The Committee learned that the PMRA only registers a pesticide if, on the basis of extensive scientific data, it has been determined that there is "reasonable certainty that no harm to human health, future generations, or the environment will result from exposure to or use of the product, taking into account its conditions or proposed conditions for registration."[9] Judgment of acceptable risk is based on a comprehensive set of toxicology and exposure data and the use of precautionary measures including the application of uncertainty factors and conservative and precautionary test assumptions. In written responses to the Committee the PMRA stated that the standard of acceptability to register a pesticide, "provides a significantly higher level of protection from risk of harm than does the approach of acting only to address threats of 'serious of irreversible damage,' as required by the precautionary principle."

Text in Section 20 of the Act, titled "Cancellation or amendment", includes the precautionary principle as defined in the Rio Declaration. The PMRA considers the implementation of precautionary measures if, over the course of a pesticide re-revaluation or special review, the Agency has scientific evidence but not full scientific certainty that a pesticide may pose a threat of serious or irreversible harm. The application of the precautionary principle is then guided by a federal document called *A Framework for the Application of Precaution in Science-based Decision Making about Risk*. Once the special review or re-evaluation is complete and the comprehensive scientific information is available, the PMRA then issues a re-registration decision based on the application of the same risk-management process used for pre-market evaluations.

The pesticide industry supported the work of the PMRA. In its written submission, Dow AgroSciences Canada Inc. described the precautionary principle as "a core component of the pesticide evaluation criteria for consideration during the evaluation and re-evaluation process." (Written submission 9186)

Pesticide Testing

A second critique articulated by some submissions to the Committee contended that the PMRA testing process is incomplete. The PMRA counters these claims by emphasizing the comprehensive pre-market evaluation process that all pesticides available for sale in Canada are subject to.

PMRA pesticide testing processes are deficient and pesticide products available for sale and use in Canada are not safe

The Committee received submissions from individuals and organizations arguing that because of perceived weaknesses in the PMRA testing processes Canadians are not adequately protected from the

[9] Canada. Parliament. House of Commons. *Pest Control Products Act*. Bill C-8, 37th Parliament, 2nd Session, 2002-2003. (Ottawa: Queens Printer of Canada, 2003) Section 2.

harmful effects of pesticides. Submitters argued that the current pesticide review process fails to examine comprehensively the toxicological effects of pesticide formulants, and that testing of cumulative and synergistic effects of pesticides is not satisfactory.

Opinions were expressed that pesticide formulants and additives are not adequately tested or regulated. Formulants such as solvents, carriers, or pH control agents may be added to pesticides. Some submissions to the Committee criticized what they saw as a lack of comprehensive formulant testing and critiqued the PMRA's practice of only listing formulants that are known or suspected toxins on product labels.

Other submissions challenged the PMRA's ability to measure the synergistic and cumulative effects of pesticides, arguing that without the ability to measure these effects, Canadians remain at risk. For example a professional agrologist, Dr. Brian Holl, questioned whether the PMRA has the capacity to measure cumulative or synergistic effects. As well, the BC Council of the Canadian Federation of University Women's submission suggested the PMRA should, but does not, require tests that measure bioaccumulation, biomagnification, and the chemical and biological interactions of pesticides.

Participants in the e-consultation expressed their views on PMRA testing in the following ways:

> *"There are huge gaps in knowledge and ongoing research utilised by PMRA in its assessments. … Contaminants in active ingredients and additives have to be thoroughly examined independently on an ongoing basis."* (Hugh Tyson, Salmon Arm, E-questionnaire 2909)

> *"The cumulative effects of chemicals in the environment are never looked at; instead substances like pesticides are studied independently."* (Mary Theresa Kelly, Vancouver, E-questionnaire 2237)

PMRA testing processes are comprehensive and pesticides registered in Canada are safe for use according to the product label

Officials from the PMRA emphasized in briefings to the Committee (October 6, 2011 and January 17, 2012) that the current pesticide registration processes are comprehensive. They also refuted other criticisms levelled against the Agency's work.

On the question of the analysis of pesticide formulants and additives, the lead PMRA official reassured the Committee that, "the Agency is aware of all the components in a pest control product" and that it is a registration requirement that all components be listed as part of a pesticide registration application. At the January 17, 2012 committee meeting, and in written answers provided to the Committee, the PMRA explained that it also requires that a specific set of toxicology studies be conducted on formulated end-products. If, during the pre-market assessment toxicology evaluation, staff determines that the formulant is potentially causing concern the PMRA takes this into account in the risk assessment. (See pages 7-11 for more details on risk assessment completed by the PMRA)

The Committee also learned that generally formulants are not listed on a pesticide label because the PMRA considers this information confidential business information (except for formulants determined to be of significant concern, allergens, and formulation preservatives). PMRA officials stressed that not listing a formulant on a pesticide label does not mean that the Agency is not aware of their presence in a pesticide. They also explained that, "the formulants used in commercial end-use products are often chemicals that are in commerce for other products" and would be covered under the *Canadian Environmental Protection Act.*

Committee members requested additional information from the PMRA on its work to measure the cumulative and synergistic effects of pesticides. The PMRA explained that it examines cumulative exposure and studies the total levels of human exposure that might result from a number of sources including water, food, and skin exposure. One PMRA official noted that results of the Health Canada-administered Canadian Health Measures Survey show that levels of accumulation of 2,4-D in Canadians were "essentially negligible." On the broader topic of mixtures, the PMRA stated that there is still methodology being developed to look at the broader story of how mixtures interact with the environment. The Agency acknowledged that measuring the effects of interactions between pesticides and environmental factors or other chemicals is a challenging endeavor because of the unlimited number of combinations of chemical mixtures that are created when a pesticide enters the environment.

With respect to the issue of synergistic effects of pesticides, the PMRA stated in follow-up information that many in the international scientific community believe that the likelihood of toxic interactions from exposures to multiple pesticides with dissimilar modes of action is low. This was confimed at the Committee meeting in Vancouver on November 8, 2011 when Dr. Keith Solomon, a Professor Emeritus the University of Guelph School of Environmental Sciences and Director of the University of Guelph-based Centre for Toxicology, explained to the Committee that the risk of synergistic effects of Domestic pesticides are minimal because synergism requires levels of exposure to at least one chemical to be high enough to cause adverse effects. Synergism also requires that the exposures be within a very short time frame of each other. Dr. Solomon told the committee that "the amounts of exposure due to pesticides are so small that they are below any threshold of biological activity, therefore there is no risk of synergism."

Pesticide Labels

Submissions received by the Committee also remarked on weaknesses in the PMRA's pesticide labelling processes. In response the PMRA emphasized for the Committee that pesticide labels accurately reflect the comprehensive pesticide testing that has been completed and clearly indicate how a product can be safely used.

Pesticide labels pose challenges for consumers

The Committee also heard that pesticide labels are not easy to understand, that their content is based on inaccurate information, and that the current regulatory system fails to effectively monitor how

pesticides are used — despite the fact that pesticide labels are legal documents and that not applying pesticides according to the label directions is illegal.

Some submitters and one presenter, Mae Burrows representing Toxic Free Canada and First Call BC, stated repeatedly that the information and instructions on labels are difficult to understand and fail to protect British Columbians from the effects of pesticides. Concerns were expressed that individuals with low literacy or non-English-speaking pesticide users may not understand the labels, and it was suggested that labels should include visual tools to communicate instructions more effectively.

Several submissions, including the Canadian Cancer Society's presentation, noted that there is little data on Domestic-class pesticide-use patterns. Furthermore, they contended that despite this apparent lack of evidence, the PMRA bases its pesticide registration decisions on the assumption that label instructions are followed 100 percent of the time.

Other British Columbians also shared their concerns that label directions are not followed 100 percent of the time. Ann Pearson, a former professional gardener from Vancouver, reported that she has, "seen people use pesticides without reading the label or wearing protective clothing, consulting with their neighbours, or considering the environment in any way." (E-questionnaire 6175) One consumer alleged that "people don't tend to follow instructions on the label and end up poisoning themselves, their families, and their pets." (Lynn Kruszewski, Vancouver, E-questionnaire 7528)

At the November 7, 2011 Vancouver meeting, West Coast Environmental Law (WCEL) maintained that the PMRA is making an incorrect assumption when it assumes that pesticide users will always follow the requirements on the labels. According to Section 2(2) of the *Pest Control Products Act* pesticide assessments must take, "into account [a pesticide's] conditions or proposed conditions of registration." WCEL argued that without the ability to judge compliance rates, the PMRA's assumption that label directions are followed 100 percent of the time is faulty and places Canadians at risk from the effects of pesticide use.

Pesticide labels accurately reflect how to safely use the product

The issue of pesticide labels was raised at both meetings with the federal regulator. Members inquired about the information contained on pesticide labels and about efforts to monitor household use of pesticides. At the January 17, 2012 meeting, the lead PMRA official explained that label directions indicate "how the product is expected to be used in the marketplace." The PMRA seeks to minimize incidence of non-compliance by imposing clear label direction requirements and by implementing compliance programs. The Committee learned that, contrary to the statements made by many critics, the registration of Domestic-class pesticides takes into account the fact that homeowners may not use pesticides as directed 100 percent of the time. For example, the Agency's exposure testing assumes that homeowners could have higher levels of skin exposure because of splashing or inadequate protective clothing. The PMRA officials also noted that in order to remove the onus on the homeowner, "a label for a Domestic product does not include any specific requirements for personal protective equipment." Furthermore, a majority of Domestic-class products are available in ready-to-use or diluted formats.

The Committee also learned that the PMRA compliance office has undertaken a number of initiatives to monitor pesticide use and educate homeowners, including educational programs on the use of Domestic pesticides and on how to read the label directions. The importance of reading the pesticide label is also emphasized on all "Pest Note" publications, online, and on the front panel of all approved pesticide products. Since 2007, the PMRA has also worked with the US Environmental Protection Agency and Canadian focus groups to develop and test possible plain language for pesticide labels.

While the PMRA explained that typically it does not complete targeted compliance programs for pesticide use in and around the home, the compliance directorate and regional offices complete industry-focused inspections and investigate any claims of pesticide misuse. In 2010-2011 the PMRA undertook 17 different inspection programs in BC. These included sampling programs on greenhouse cucumbers and other vegetables, marketplace inspection programs on agricultural dealers and programs to inspect U-Pick operations, arborists, and industrial vegetation management.

Finally, the *Pest Control Products Act* includes a legal requirement that any health or environmental incident reported to a pesticide registrant must also be reported to the PMRA. The Agency compiles, monitors and analyses this data and if trends are identified, the Agency takes action to rectify the situation.

Industry-PMRA Relationship

The final source of concern identified by presenters and submitters to the Committee was the PMRA's relationship with the pesticide industry. Some submitters maintain that the PMRA is captive of the pesticide manufacturing industry while the PMRA argues that its registration decisions are based on the work of skilled, regulated, and independent scientists.

PMRA is captive of the pesticide manufacturing industry

The PMRA's practice of using toxicology data submitted by pesticide manufacturers was a source of concern among some participants in the e-consultation. Members of the public argued that since toxicology data submitted for pesticide registration often comes from applicants' internal or contracted laboratories, there is the possibility that the data could be manipulated to guarantee pesticide registration. One e-questionnaire respondent, for example, alleged that "all pesticides currently approved by Health Canada's Pest Management Regulatory Agency are suspect due to the PMRA's too-cozy relationship with industry." (Kelly Franklin, Nanaimo, E-questionnaire 1357)

Data used for PMRA decision-making meets international standards

The Committee learned from the PMRA that generally the studies submitted by industry are of very high quality. In written materials provided to the Committee, the PMRA explained that its comprehensive data requirements and study protocols are harmonized with the United States and other OECD countries. Over 200 toxicology studies are required to register a pesticide product and the data from these tests meets international requirements and protocols laid out by the OECD, the

EPA and the *Pest Control Products Act*. Laboratories completing the toxicology studies are required to follow OECD-established Good Laboratory Practices and are subject to independent audits to confirm their conformity with laboratory protocols. For laboratories in Canada these audits are completed by the Standards Council of Canada on a two-year cycle.

PMRA officials reiterated that over 300 PMRA scientists and evaluators examine, cross-reference, and assess the submitted data to make sure that it is scientifically sound and consistent. Should questions about the data arise, the PMRA rejects deficient studies or requests additional data.

Provincial Pesticide Regulation

During the course of its inquiry the Committee also heard concerns about the adequacy of the provincial *Integrated Pest Management Act* (IPMA). Submitters identified five areas of weakness in existing BC legislation: sales regulations, training of certified pesticide applicators, monitoring and enforcement, the application of IPM, and Schedule 2. The Ministries of Environment, Agriculture, and Forests, Lands and Natural Resource Operations responded to these critiques by explaining the *Act* and regulations in detail and by describing the varied compliance measures undertaken in support of the *Act*.

Sales Regulations

The sale of pesticides is not effectively regulated

The Committee received submissions describing shortcomings in the IPMA retail regulations. Some submitters described personal experiences where they had purchased pesticides without interaction with a certified dispenser, as is required by the Act. Others also noted that often the pesticide dispensers cannot provide adequate pest-control and pesticide information. It was also brought to the attention of the Committee that Commercial-class pesticides can be purchased and applied by homeowners without a certification or licence.

Exhaustive regulations and certification requirement for retailers are enforced but there is room for improvement

In response to questions from committee members, the Ministry of Environment provided information on the regulations that retailers are required to follow. Retailers must follow certain storage and display requirements and all commercial and domestic vendors are required to have trained dispensers that provide pest management advice and inform consumers on how to correctly use pesticides. To receive a dispenser certificate an individual must pass either the commercial or the domestic dispenser exam. One Ministry of Environment official indicated that pesticide dispensers in BC receive training beyond the national standard but conceded that it is possible for "dispensers to pass a certification without a really good grasp of the subject matter." (Victoria meeting, January 25, 2012) At a Committee meeting in Victoria, the Canadian Consumer Specialty Products Association noted that its member companies often provide additional point-of-sale information materials and offer expertise to answer consumer questions.

The Ministry of Environment explained that pesticide retailers are audited regularly and that retailer compliance audits were completed in five of the last seven years. In the 2011/2012 fiscal year the Ministry intends to complete 300 vendor reviews in the coastal region. Audits focus on a number of requirements including certification, licences, storage or on the dispenser's required interaction with consumers. Compliance is assured through phone calls, record checks, and random spot checks and through focused verification projects that target a specific sector or requirement. Between 2005 and 2011, 47 pesticide vendors were issued letters of non-compliance. Ministry officials indicated that they are aware of deficiencies in the monitoring of retailers and dispensers and are working to correct these.

Training of Certified Pesticide Applicators

Training of certified pesticide applicators is incomplete

Over the course of the e-consultation concerns were expressed by the public about the thoroughness of the training and certification processes required to apply pesticides in BC. E-questionnaires and written submissions commented that the pesticide applicator training process is much too simple.

The Committee learned that the process to become a certified pesticide applicator includes no hands-on training and that employers are relied upon to provide applicators with on-the-ground training. Participants in the e-consultation suggested that extensive training is necessary to be qualified to apply pesticides, that a course on pesticide application should be required to become a certified applicator, that a company should be obligated to have more than one certified applicator on staff, and that an on-line certification similar to a boating licence should be required before homeowners are allowed to purchase pesticides.

Here is a sample of the submissions the Committee received:

> *"The current pesticide applicator training is much too simple to be effective as it is all open book. I feel that only people who undergo extensive training and education should be able to apply pesticides and only under certain conditions."* (Brock Tingey, Nanaimo, E-questionnaire 4608)

> *"I believe the current applicator licence is entirely too easy to obtain. Continuing education should also be part of maintaining a licence."* (Eric Reynard, Salmon Arm, E-questionnaire 5508)

Certified pesticide applicators in BC meet national training standards

At the January 25, 2012 meeting in Victoria the Committee was informed by the Ministry of Environment that successful completion of a BC certification exam is required to become a certified pesticide applicator. There are 16 specific applicator categories including aerial spraying, landscaping and fumigation. Testing in BC meets national standards and an updated provincial core training manual has been adopted as a national training tool. The Ministry explained that the applicator certification process provides individuals with a good basis for further on-the-job learning but conceded that the quality of hands-on training depends on the employer. The manual and test include information on pesticide groups and formulations, on IPM, on pesticide legislation, and on

how to read a pesticide label. The Ministry of Agriculture provides farmers with information on pesticide use and IPM and encourages additional education on the farm or with farm associations.

Certified pesticide applicator training manuals are available only in English while exams for the agricultural category are offered in English, Punjabi, Vietnamese, and Cantonese. Candidates must be able to read English well enough to answer questions based on an English label. Re-certification is granted either by re-writing the test or by completing at least 20 hours of training over 5 years.

The Ministry of Environment indicated that, "an apprenticeship-type program could be implemented as part of the requirement," but did not recommend that the government run such a program. Instead, industry could set up a, "program that guaranteed some on-the-ground training and experience". Ministry officials also suggested that, should certification be required for more or all agricultural pesticide applicators, translating and updating of manuals could be possible.

Monitoring and Enforcement

Monitoring and enforcement of the IPMA is inadequate

The Committee received written submissions and e-questionnaire responses expressing concern that pesticide use is under-monitored and that pesticide misuse goes unpunished in British Columbia. It was argued that without adequate monitoring, particular areas and watersheds could be subject to multiple, overlapping pesticide applications.

Participants also expressed concern that the province does not monitor or track the volume of Domestic-class pesticide sold. The model law presented to the Committee by the University of Victoria Environmental Law Centre recommends that vendors be required to collect personal information for the purchase of Schedule 2 pesticides and mixed-use pesticides. The David Suzuki Foundation also noted in their Vancouver presentation that any new legislation should require retailers retain a record of all pesticide sales.

Submissions to the Committee also highlighted the misuse of pesticides in the province. British Columbians expressed concern that current pesticide regulations are not enforced in a consistent manner. Here is sample of what was said on the issue:

> *"I have witnesed many instances of inappropriate handling and storage of chemicals and have yet to witness any form of inspection let alone fines."* (Jason Herz, Sechelt, E-questionnaire 2783)

> *"If the BC government isn't going to provide enough people to monitor the use properly, then anything done should be considered lip service only."* (Thomas Henschel, Victoria, E-questionnaire 2857)

The Ministry of Environment works with partners to ensure compliance

In response to citizens' concerns about the monitoring of pesticide use in the province, the Ministry of Environment emphasized that Health Canada is responsible for testing the human health and

safety and environmental impacts of pesticides. While the Ministry of Environment works collaboratively with partners and other agencies to look at a variety of health and environmental information, it clarified at the January 25, 2012 meeting in Victoria that with regards to the, "overall effect of a combination of pesticides on any particular organism, there is no agency responsible for or conducting that type of work." The Ministry of Environment does, however, complete water quality and other testing in response to spills or as part of compliance activities.

Responding to concerns about the lack of Domestic-class pesticide-use data, the Ministry of Environment explained that vendors of Commercial- and Restricted-class pesticides are required to submit an annual summary of pesticide sales. Ministry officials noted that it has never been the practice to collect data on Domestic pesticide sales. They also mentioned that it would be possible, with the necessary resources, to update the current paper-based system and begin collecting Domestic-class pesticides sales information.

The Ministry of Environment's objective is to ensure compliance with its regulations. This is achieved through a variety of tools including warning letters, tickets, orders, administrative sanctions, and prosecutions to enforce compliance. When determining the enforcement measures to use in the event of non-compliance, ministry staff examines the environmental, human health, or safety impacts resulting from non-compliance. Follow-up information from the Ministry of Environment explained that tickets can be issued to a maximum fine of $575, while persons and corporations can, if convicted of a first offence, be fined as much $400,000 or imprisoned for up to six months.

Integrated Pest Management

IPM is not designed to reduce pesticide use

The Committee also heard from presenters that the implementation of IPM in BC is unlikely to generate a significant reduction in cosmetic pesticide use. In their Vancouver presentations, West Coast Environmental Law and Toxic Free Canada – First Call BC explained that while the *Act* provides a clearly laid out framework for IPM, it does not require pesticide users to prioritize non-chemical alternatives and fails to prevent pesticide abuse. Pesticide Free BC and the Surrey/White Rock Pesticide Free Coalition claimed that the chemical landscape industry uses the IPM approach to justify pesticides as part of normal lawn and garden care.

Proponents of a BC ban were also clear that while IPM can be an effective tool for reducing pesticide use in the right context, applying IPM to cosmetic use is not an appropriate alternative to a province-wide ban on the cosmetic use of pesticides. They suggested that legislating the application of IPM for the cosmetic use of pesticides would require considerable enforcement resources and vast amounts of data on residential pest levels, and on current and past strategies used to control pests.

IPM is one of the most effective ways to reduce overall pesticide use

IPM is a processes designed to prevent and address pest problems using a considered, rather than reactive, pest control approach. In its initial briefing to the Committee on August 22, 2011 the

Ministry of Environment noted that British Columbia is seen as a leader by other jurisdictions in that its legislation requires the use of IPM. Using IPM means that pest control is more environmentally sustainable. Detailed information about the application of IPM in BC is outlined on page 15.

Organizations including Premier Tech Home and Garden, "firmly support the province's emphasis on integrated pest management," (Written submission 8441) and have taken role in promoting it by developing point-of-sale materials to use in retail outlets and training programs for retail staff to assist them in making recommendations to the consumer. Numerous written submissions and e-questionnaires from individual British Columbians also expressed support for IPM. Here are examples of how organizations and individuals expressed their support for IPM:

> *"I firmly believe that an IPM approach works tremendously and even the "layman" can use basic techniques of the IPM philosophy with minimal information/education."* (Rich Fournier, Oliver, E-questionnaire 3073)

> *"Integrated Pest Management [is] a proven methodology to safely and responsibly manage turfgrass pests and diseases. IPM, when practiced in its proper context, is not a license to apply pesticides indiscriminately. There is simply no better vehicle in which to determine when and where pesticides should or should not be used on turfgrass."* (Paul Gillen, Sports Turf Association, Written Submission 8436)

Schedule 2

Schedule 2 needs updating

The Committee also heard about the need to update Schedule 2 of the IPMA. Schedule 2 includes a list of pesticide products exempt from the IPMA and therefore free to be applied according to label directions by homeowners and certified pesticide applicators without additional licensing.

Some British Columbians commented that pesticides need to be removed from the list because of their health and environmental effects, while others requested that the list be updated to include new low-risk pesticide products. In a written submission, Neudorff North America noted that Schedule 2 is greatly outdated and impacts many municipal bylaws that use the schedule as a list of pesticides exempted from bylaw provisions. Two municipalities, Richmond and Coquitlam, recommended that an updated list include new, innovative and safer pesticide products. The Committee also received recommendations that the list be updated every six months.

In Victoria on January 25, 2012, the Ministry explained that Schedule 2 was last updated in 2005 and that the Ministry intends to update the schedule to reflect changes in the marketplace. Ministry officials were clear that Schedule 2 is not intended to be a list of low-toxicity products and that inclusion of some products, such as swimming pool chemicals, is due to the manner that they are currently used.

Bans in Other Jurisdictions

As part of its inquiry into the feasibility of a BC ban on the cosmetic use of pesticides, the Committee reviewed other jurisdictions' experiences with bans. Since 2003, seven Canadian provinces have introduced legislation or regulatory changes on the sale and use of pesticides for cosmetic purposes. These bans generally share a common purpose — the protection of human health and/or the natural environment from perceived unnecessary exposure to pesticides — but the approach varies from province to province. (See Appendix D: Comparison of Existing Provincial Bans)

This section of the report provides an overview of the existing provincial pesticide bans, including their exemptions. It then presents information on the impacts of these bans, as well as the effects of bans in other jurisdictions.

Overview of Provincial Bans

Québec introduced the *Pesticides Management Code* in April 2003 and became the first Canadian province to enact a ban on cosmetic use. The legislation was phased in over three years and bans the use and sale of products containing 20 active ingredients (including 2,4-D) for lawns and turf. The ban further restricts pesticide use in places frequented by children. A list based on requirements in the US *School Environment Protection Act* allows only biopesticides and 14 other identified products to be used on outdoor and indoor areas with children. The *Code* includes a list of about 900 allowable pesticides that must to be sold over the counter.

The Québec pesticide code co-exists with 120 municipal bylaws. The ban was subject to a NAFTA challenge. In Spring 2011 the matter was settled by the Québec government issuing a public statement acknowledging that "products containing 2,4-D do not pose an unacceptable risk to human health or the environment, provided that the instructions on their label are followed."[10] The settlement agreement did not affect the provincial ban.

Ontario passed the *Cosmetic Pesticides Ban Act* in 2008 and the legislation took effect in 2009 with some remaining provisions phased in over two years. Ontario banned the sale of Domestic-class pesticide products for 'cosmetic uses' on outdoor residential and landscape areas including patios, vegetable and ornamental gardens, parks, and school yards. Currently in Ontario the use of 96 active ingredients and 172 products containing these chemicals is banned. Only biopesticides and lower-risk active ingredients identified in a schedule can be used in landscaping. Mixed-use products that contain active ingredients banned for cosmetic use on lawns and gardens but permitted for purposes such as agriculture are sold behind the counter. As new products become available they are evaluated by the Ontario Pesticides Advisory Committee and classified appropriately. Ontario's provincial ban

[10] *Settlement Agreement* between Dow AgroSciences LLC. and Her Majesty the Queen in Right of Canada. May 25, 2011. http://www.international.gc.ca/trade-agreements-accords-commerciaux/assets/pdfs/DowAgroSciences_Settlement-eng.pdf

supersedes municipal bylaws therefore Ontario municipalities are not able to implement more stringent restrictions.

Alberta's ban was introduced in November 2008 and came into effect on January 1, 2010. It aims to reduce the amount of chemical run-off in waterways by prohibiting the sale and use of fertilizer-herbicide mixtures for landscaping on private land. Alberta's ban preceded the federal PMRA re-evaluation decision in February 2010 to de-register fertilizer-pesticide combination products. The last date of sale of these products within Canada is December 31, 2012.

New Brunswick updated its 1974 *Pesticides Control Act* in December 2009 and banned the sale and use of pesticide products containing 2-4,D for lawns. The ban also includes certain pesticide packaging or formulations such as pesticide-fertilizer mixtures, products using spray cartridges designed to be applied with a spray hose, and concentrated products requiring dilution or mixing. More than 200 lawn pesticides and 35 commercial products are banned. Products containing 2-4,D as the active ingredient are the only ones banned without exemption.

In New Brunswick, lawn care companies must be registered in a Ministry of Environment–approved IPM program in order to purchase and apply commercial lawn pesticides. Individual applicators working for lawn care companies must have valid pesticide applicator certificates. Additional regulations mean that pesticides can only be applied to up to 50 percent of a lawn, once per season, except in the case of insect infestations when a ministry permit is required for additional treatments.

Prince Edward Island amended its legislation on April 1, 2010 to match New Brunswick's law.

Nova Scotia has Canada's newest provincial ban on cosmetic pesticides. The *Non-essential Pesticide Control Act* prohibits the sale and use of non-essential pesticides for use on lawns in 2011 and on ornamental plants in 2012. The ban applies to residential, commercial, government and institutional properties, but exempts golf courses and vegetable gardens. The province maintains a list of acceptable low-risk pesticides, based on Ontario's list and the Canadian General Standard Board's list of allowable substances in Organic Production Systems. Pesticide products containing active ingredients not on this list of acceptable products are banned. As in Ontario, mixed-use products are only available behind the counter.

Nova Scotia has never allowed local governments to enact bylaws on pesticides, except for the Halifax Regional Municipality pesticide bylaw.

Newfoundland and Labrador's regulatory changes on the use of pesticides on lawns came into effect on May 1, 2012. Under the new regulations products containing five specific active ingredients — carbaryl, 2,4-D, mecoprop, dicamba, and MCPA — are not to be sold for use or used on lawns. A number of exemptions are included in the new regulation.

Manitoba's Conservation and Water Stewardship Minister announced in early 2012 his government's intention to release a discussion paper on how a provincial ban on cosmetic pesticides

might work. The paper is due to be released in spring 2012 and the government has indicated it will seek input before introducing legislation in late 2012 or early 2013.

Exemptions

Industry

All seven provincial bans include exemptions for agriculture and forestry. The unintended consequences these industries face after bans came into effect are discussed later in this section on pages 43-44.

Golf

Each of the six provincial bans includes exemptions for pesticide use on golf courses.

In **Québec**, golf courses are exempt from the provincial ban but must submit pesticide reduction plans every three years. The plan must include details on the total quantity of pesticides applied annually in the previous three years, pesticide reduction objectives for the next three years and information on non-pesticide practices used to observe, monitor and treat pest issues. The plan must be signed by an agronomist who is a member of the Ordre des agronomes du Québec.

The **Ontario** ban includes an exemption for golf courses (including tees, fairways, greens and rough), provided certain conditions are met. To use banned pesticides on playing surfaces, golf courses must be accredited by the IPM Council of Canada. These courses are also required to report their pesticide use levels publicly and to the Minister of Natural Resources. Unaccredited golf courses can only use biopesticides and lower risk pesticides to maintain their courses.

In **Alberta**, golf courses on public land must be licensed and employ at least one certified pesticide applicator.

In **New Brunswick**, golf course personnel purchasing commercial lawn care pesticide products, including 2-4,D, must show proof of a valid pesticide-applicator certificate and proof of affiliation with an acceptable IPM program. Golf courses must therefore be accredited by a Department of Environment–approved IPM program. Unaccredited golf courses may hire the services of a company that holds a Provincial Pesticide Use Permit.

In **Prince Edward Island** commercial pesticides, including those with 2,4-D, can be used on golf courses under an IPM program. Golf course personnel purchasing commercial lawn care products are required to show proof of a pesticide applicator licence.

Nova Scotia's legislation exempts golf courses but requires that pesticide applicators be certified.

In **Newfoundland and Labrador** golf courses are exempt from new regulations on the use of products containing five specific active ingredients.

Invasive species and public health

Three provinces — Québec, Ontario and Nova Scotia — include exemptions that allow for the use of pesticides on residential landscapes to address plants and pests that threaten human health and to manage invasive plants and noxious weeds. The bans in Alberta, New Brunswick, and Prince Edward Island do not require exemptions because Domestic-class products remain available for use by homeowners.

In **Québec** glyphosate is available for domestic use; however, the *Code* does not include provisions for unexpected pest problems such as invasive plants. The government intends to amend regulations to allow for exceptions to address human health and invasive species.

The **Ontario** legislation includes an exemption for the promotion of public health and safety and therefore allows banned pesticides to be used to control invasive species, poisonous plants and insects, and to control animals and fungi that affect buildings. Pesticides containing glyphosate and glufosinate can be used to control plants poisonous to the touch. The Ontario ban also includes exemptions to use pesticides on trees, when deemed necessary by a tree care specialist.

Ministerial exemption is required to use a banned pesticide to control an invasive species that may be detrimental to the health of a person, the environment or the economy; to protect a species native to Ontario; or to protect a rare ecosystem. The individual who will apply the pesticide product must apply to the Ministry of Natural Resources and receive a written decision. When banned pesticides are applied, they must be used in accordance with IPM principles.

Nova Scotia recognized that there are some circumstances that may require the use of a pesticide that is not on the allowable list. Regulations were created to allow pesticides, including glyphosate, to be used to control pests that threaten public health, plants that are poisonous to the touch or are invasive species,s and pests that may cause structural damage.

Experiences with Provincial Bans

While Québec's ban on the cosmetic use of pesticides was phased in between 2003 and 2006, the other five provincial pesticide bans have only been implemented in the last four years. Therefore data and specific studies on the effectiveness of the legislation and on the impacts bans have had on health, environment and provincial economies are not readily available. This section presents preliminary research and anecdotal information on the experiences of other provinces with bans on the cosmetic use of pesticides. It begins by examining the data available on the environmental effects of bans and then presents information on how provincial bans have affected pesticide use and sales and different sectors of the economy. Also covered is the question of how provincial ministry resources are affected when new bans come into place.

Environmental Effects

Limited information is available on whether provincial bans have had any effect on ecosystem health. One study on the impact on water quality was brought to the attention of the Committee. In November 2010 the Ontario Ministry of the Environment issued a report entitled *Changes in Urban Stream Water Pesticide Concentrations One Year after a Cosmetic Pesticide Ban.* This ministry worked with five urban Ontario conservation authorities to monitor pesticide concentrations in ten urban streams before and after the Ontario pesticide ban took effect. Over the course of the study 168 samples were taken and analyzed for 105 pesticides and pesticide degradations. Results from the study indicate the continued presence of at least two pesticides in all streams. It was found that the "mean number of pesticides detected per sample in 2009 was marginally less than observed prior to the ban."[11]

The Ontario study indicated that the concentrations of 2-4,D, dicamba and MCPP in urban stream water were significantly lower after the ban, while concentrations of glyphosate did not change significantly. Although this study offers a snapshot of before and after a ban came into effect, the results are unable to link the reduction in pesticides directly to the implementation of a ban.

At a briefing by the BC Environment Ministry on August 22, 2011, the Committee learned that a drop in chemical levels was also detected in waterways in Alberta after the implementation of its ban. However, Alberta officials reported to their BC counterparts that previous pesticide levels were not causing any discernible damage.

Impact on Pesticide Use and Sales

Officials serving on the BC Integrated Pest Management Committee consulted with their counterparts in other provinces and provided the Committee with preliminary information on how provincial pesticide bans have affected pesticide use and sales. This information was submitted in a written response, prepared by the Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations, dated February 10, 2012.

New Brunswick officials shared data submitted by lawn care companies that showed a drop in pesticide use by the landscape industry since 2009, when the ban came into effect. Between 2009 and 2010, one year after the ban was introduced, pesticide use by landscape pesticide applicators was reduced by 50%; herbicide use dropped 37%; and insecticide use dropped by 66%. Since the data show that over time all pesticide use has been declining, it cannot be confirmed that the decrease is attributable exclusively to the new requirements. New Brunswick does not collect sales data for Domestic-class pesticides so the impact of the ban on personal use by residents is not known.

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[11] Aaron Todd, Ontario Ministry of Environment, "Pesticide Concentrations in Ontario's Urban Streams One Year after the Cosmetic Pesticides Ban." PowerPoint presentation to IPM Symposium, Toronto, Ont., January 10, 2010.

The Committee also received information about annual pesticide sale and use data for Edmonton and Calgary, which Alberta Environment and Water has been collecting from vendors, applicators and municipalities since 2003. The 2010 summary for the City of Edmonton reflects the absence of fertilizer-herbicide combination products since the ban on January 1, 2010, and a residential decrease in the amount of 2,4-D-based turf herbicides used. The summary also shows a residential increase in the amount of non-selective domestic herbicide used, with a shifting trend in 2010 towards acetic acid-based products, and increased use of insecticides and corn gluten products. This data from the City of Edmonton "suggest that the absence of conventional pesticides may lead to significant increase in overall pesticide use."

Results of two surveys, one conducted with Ontario homeowners and the other of professional landscapers, show that both groups have concerns two years after the ban on cosmetic use was implemented. The surveys were commissioned by CropLife Canada, an association representing the manufacturers, developers and distributors of pesticides. According to a trade periodical, 63 percent of landscapers surveyed said they are against Ontario's pesticide ban; almost half of the landscapers said their sales are lower in 2008; and 71 percent of lawn care companies said their customers were less satisfied in 2010 than in 2008. "Respondents to the landscaper survey also said they had been asked by clients to use products that are now banned and they've had customers apply banned products themselves."[12]

Economic Impacts

Supply of pesticides

On the question of whether the proliferation of pesticide bans creates a hostile marketplace for new products, BC ministry officials reported that they have no evidence to indicate that any manufacturer has specifically refused to bring a product to the Canadian market because of provincial bans on the cosmetic use of pesticides. Officials did note, however, that several products available in the USA (both Commercial- and Domestic-class) are not brought to Canada because of the smaller market in Canada. Ministry officials assume that bans on cosmetic uses will exacerbate this for Domestic-class products.

Agriculture

BC Ministry of Agriculture officials reported to the Committee that their colleagues in other provinces with bans have indicated the following effects: Québec farmers are applying more pesticides on orchards close to residential areas and complain more about the lack of availability of Domestic-class pesticides; and pests such as apple maggot, apple scab and codling moth are being reported as greater problems near residential areas in Québec.

Ministry staff in provinces with bans also noted that fewer pest control products are being developed for the ornamental and turf sectors as there is no domestic market. Ontario hobby farmers and

[12] "Two Years After Pesticide Ban, Surveys Show Public and Professional Frustration," *Horticultural Review*, September 15, 2011, p. 20.

backyard gardeners are just becoming aware the ban affects them and are writing letters to politicians seeking to be exempted from the ban. A reduced number of pest control products are available to use on backyard gardens and trees.

In the ministry response, it was noted that the potential impact of a ban may be different in British Columbia than in other provinces as BC is considered the most urbanized province in the nation with 85% of the population urban, 15% rural and 1.5% farmers. Eighty percent of people living in the Agricultural Land Reserve are non-farmers and a ban on the cosmetic uses of pesticides could impact their ability to manage pests that threaten agriculture.

Forestry

On January 25, 2012, the official representing the BC Ministry of Forests, Lands and Natural Resource Operations informed the Committee that the forestry sector in Ontario has also been affected by the ban in place there. She noted that in Ontario the term 'forestry' has not been clearly defined and that as a result it is unclear how the ban and its forestry exemptions apply to urban forests. Additional challenges for the forest industry have resulted from public relations and communication issues. Due to messaging around the lack of safety or lack of perceived safety of cosmetic pesticides, the public is concerned about the forestry sector using pesticides with the active ingredients that are banned for cosmetic uses. As a result important forest programs are meeting resistance in Ontario. The Committee was urged to consider the terminology it uses when communicating with the public in order to avoid similar challenges in BC.

Implementation and Enforcement

Implementation

The Committee learned that implementation of new restrictions on the cosmetic use of pesticides has proceeded smoothly in some provinces – namely, New Brunswick and Prince Edward Island, Nova Scotia and Québec – while it has posed challenges for Ontario.

New Brunswick and Prince Edward Island have banned only concentrates, hose-end products and 2,4-D so the residents have a suite of products still available to them to manage a variety of pests. These provinces have not reported a need for a permitting system as other products are still available.

The Nova Scotia Department of Environment reports that most vendors and residents accept that many Domestic-class products are no longer available for sale. Pesticide applicators accept the new requirements so few issues have arisen since the ban came into effect in 2011.

Similarly, Québec, the first province to ban the use of certain lawn pesticides in 2001, reported few issues with respect to the need for exemptions. This province is currently in the process of changing their regime to expand beyond lawns to include other landscaped areas.

BC ministry officials also provided feedback received from Environment, Agriculture and Natural Resources counterparts in Ontario. Agriculture representatives indicated that they are receiving more calls about pest management. Natural Resources staff has had to dedicate more resources to address issues arising from the ban including issues about about land uses (exactly where and when the ban applies, what land type or activity counts as forestry, what counts as agriculture) and agricultural uses. Other issues are whether, and which, pests may be treated under the ban, and communication about the safety of pesticides.

Compliance of vendors

BC officials informed the Committee that generally other provinces report that most of the regulated community wants to follow the new rules, they just need the new requirements to be explained to them. Nova Scotia officials indicated that, after one year, of putting in place a ban, they dedicate the same or fewer resources to compliance of vendors of Domestic-class products and landscape pesticide uses. They believe that this is due, in part, to placing resources into communications and compliance efforts very early on. The significantly larger province of Ontario hired over 20 summer students for two consecutive years to promote and verify the new requirements for vendors. Ontario Ministry of Environment staff suggested that the increase in complaints related to the ban was not substantial, with anecdotal information suggesting greater confusion about the safety of products.

Effects of Municipal Bans

At the January 25, 2012 meeting and in follow-up information, Ministry of Agriculture officials explained that municipal bans in BC are impeding efforts to deal with the nursery pest, European Chafer. Specifically, the City of Vancouver and City of Burnaby bylaws prohibit the application of insecticides for the control of European Chafer. Other pest management tactics are being used that are helping to suppress this pest; however, they are not preventing its spread towards agricultural crops. The European Chafer has spread from the epicenter in New Westminster to Coquitlam, East Vancouver, Kerrisdale, Richmond and North Delta.

Similarly, some of the province's regional weed committees have reported that municipal bylaws are hindering the ability to manage invasive plants. Also, public and municipal perceptions of safety, and confusion regarding pesticide bylaws and exemptions for noxious weeds, delay and prevent quick responses to invasive species.

The Committee also learned, via the news media, that another unintended consequence of municipal bans is the decline in the quality of turf on playing fields. One news story reported that that in March 2012 the North Okanagan Regional District decided to invest in resurfacing a baseball diamond in Coldstream, BC after the turf became overrun by weeds following the enactment of a local pesticide ban.[13] Another newspaper article reported that the problem of weeds and invasive plants prompted one suburban Chicago municipality to modify its turf management policies to once again allow

[13] "Diamond will be repaired," *Vernon Morning Star*, 11 March 2012, p. 10.

groundskeepers to use pesticides.[14] A recent editorial in *Maclean's Magazine* suggested that the challenges of maintaining natural turf sports field without pesticides have resulted in the move to artificial turf fields in Ontario.[15]

[14] "Park District of Highland Park lifts pesticide ban for 3 parks," *Sun-Times*, August 19, 2011.
[15] "An odd way to encourage a more natural environment," *Maclean's Magazine*, March 12, 2012, pp. 4-5.

Conclusions and Recommendations

Introduction

Tasked with examining the scope of a possible ban on the sale and cosmetic use of pesticides and with identifying any exemptions or restrictions to a possible ban, the Committee undertook a comprehensive inquiry into the regulation and use of pesticides in British Columbia. We were briefed by officials from the federal and provincial regulatory bodies, heard presentations from invited stakeholders, and reviewed an unprecedented number of written, video and e-questionnaire submissions. It is clear from the volume and quality of submissions that the issue of cosmetic pesticide use is an important and emotional issue for British Columbians.

All the input we received has been carefully considered during committee deliberations, which have been conducted in a collegial and honest manner. Based on what we have learned during the process, committee members on both sides of the House are convinced that further restrictions on the use and sale of pesticides in British Columbia are necessary. However, we have been unable to reach a consensus on the need for a provincial ban on pesticide use for cosmetic purposes — a division of opinion that reflects the ongoing debate and tension in society at large. The majority of committee members favour further restrictions on the sale and use of pesticides in British Columbia rather than an outright ban on cosmetic use, the option preferred by the minority.

Before reaching this conclusion, the majority of committee members carefully considered the evidence presented by health and environmental advocates. In particular, we assessed the claims made about the impacts of pesticide exposure on human health and weighed the links proposed by epidemiological data against the lack of proven causal relationships between pesticides and negative health outcomes. We are impressed with the passion and sincerity with which the arguments in favour of a ban were made. However, we are not convinced that currently available scientific research provides a basis for disagreeing with the science-based evaluations made by the PMRA.

Committee members representing the majority are satisfied with how the PMRA registers and re-evaluates pesticides and are confident with the scientific integrity of the federal processes. From our perspective, the scientific evidence does not, at this time, warrant preventing British Columbians from buying and using approved Domestic-class pesticides for lawn and garden care. In other words, we are not prepared to say to consumers, "You can no longer go into any store, under any circumstances, and buy 2,4-D," and not only that, "Nobody can apply it to your private property, regardless of their credentials and training." At the same time we do believe there is a need for additional restrictions on the sale and use of lawn and garden pesticides and for additional education and application of IPM principles in the residential context.

Ban on Pesticide Use

A majority of committee members think there is a need to educate the public on existing regulations that govern public use of pesticides. For this reason, we reiterate the point made earlier in the report (page 14) that use of all pesticides (except products in Schedule 2) is prohibited on public spaces such as schools, municipal and playing fields open to the public, except where integrated pest management plans are in place and when pesticides are applied by certified applicators.

The majority of committee members also believe that there is a strong case for much tighter regulation of the sale and use of pesticides intended for use in commercial operations such as agriculture, forestry, and industry. It has come to our attention that individuals who wish to use Commercial-class pesticides on their own private land – for example, homeowners or farmers, hobby farmers, private rangeland managers – are not currently required to be certified to purchase or apply pesticides.

To address this problem, the majority on the Committee concluded that the Commercial-class pesticides should be purchased and applied only by certified pesticide applicators. A certification requirement addresses the problem of pesticide misuse or overuse and poses less of an administrative and financial burden on farmers than a new licensing requirement. We are cognizant that some farmers will need time to become certified, and that a new tier of certification may be required to ease the transition. For this reason, we encourage government to complete a thorough consultation process with the agriculture industry.

We anticipate that, once implemented, the certification requirement will lead to a reduction in pesticide use. We think it is unlikely many residential pesticide users would want to go through the process of getting certified to buy a commercial pesticide in cases where the provincial law or municipal bylaw does not allow its use.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Ban

1. Ban the sale of Commercial-class pesticides as soon as possible, except for use by certified applicators. Begin immediate consultations with the agriculture industry on how best to prohibit the sale of Commercial-class pesticides to anyone but a certified applicator.

Point of Sale

During the inquiry and through their own personal experiences, committee members learned that some of the pesticide retail regulations in place are not followed on a consistent basis. To protect the public and to reduce the use of pesticides, our recommendations aim to enhance communication about responsible pesticide use. In our view, pesticide products need to be locked away or stored behind the counter so that a consumer must interact with a certified dispenser before the sale occurs.

These regulatory changes will make sure that pesticide dispensing is done properly so that homeowners are not able to purchase a pesticide product without speaking with a certified pesticide dispenser, receiving information on alternative pest management strategies, and learning how to safely apply the product.

The Committee also learned that the Province does not currently collect sales information on Domestic-class pesticides. By putting in place requirements that vendors collect and report all Domestic pesticide sales the Province will be able to better monitor overall sales levels and could use this information to decide whether future restrictions on sale and use are necessary.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Point of Sale

2. Amend IPMA regulation(s) regarding how pesticides can be sold to require vendors to restrict consumer access to most Domestic-class pesticides so customers must interact with a certified dispenser before purchasing a pesticide.
3. Require a certified dispenser to ensure that there is a strong justification for pesticide use before a pesticide is sold, based on IPM principles, including the following:
    a. the best way to control pests and weeds;
    b. the right way to use a pesticide so that it does the job;
    c. the legal uses of the pesticide; and
    d. the importance of reading and following the directions on the label.
4. Require a vendor to keep a record of each sale of a Domestic-class pesticide, in line with the existing requirement for a vendor of a Commercial-class pesticide; and that government use the records of sales information to track Domestic-class pesticide sales.
5. Provide vendors with a reasonable phase-in implementation period.

Compliance and Enforcement

Based on e-consultation submissions and personal experiences the Committee believes compliance and enforcement of existing rules must be strengthened. We recognize that this will require additional resources for the Ministry of Environment. It is important that inspections be increased to ensure that certified pesticide dispensers are selling the products according to regulations and that consumers are receiving the appropriate information. This will involve the Ministry informing retailers that, "we are going to beef up compliance," and that if a certified dispenser is not available to talk to purchasers, the businesses will be fined.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Compliance and Enforcement

6. Increase inspections of retail outlets to ensure that pesticide products are accessible only by interaction with certified dispensers and that the consumer is receiving appropriate information and instruction.
7. Increase penalties for those vendors not meeting the responsibility that accompanies their right to sell the product.

Education

During the course of the inquiry, it became clear to committee members that many people do not understand the federal process for registering pesticides and are not aware that when pesticides are used safely environmental and health risks are reduced to an acceptable level and plant health is maintained. The Committee is convinced that additional education about the benefits of pesticides and about the safe use of chemical pesticide products would be beneficial.

In our view, the cost of delivery of public education should be a responsibility shared by the government, manufactures and vendors. Companies that produce pesticides have a role to play in ensuring that consumers have access to information on their products and are informed of alternative treatment options and IPM principles. We suggest that the government work with manufacturers and retail partners and with non-commercial educational organizations to develop diverse public education opportunities. Educational programs and resources could be coordinated by provincial IPM specialists who would provide information on IPM best practices for the development of education and training curricula. Providing the public with up-to-date educational resources developed by specialists in IPM will provide British Columbians with a suite of educational tools and will lead to better, more informed pesticide use in the province.

The Committee suggests the creation of a list of preferred products and treatment options that are most sensitive to the environment. This list and additional IPM resources should be readily available on a webpage designed to help homeowners make smart pest management decisions. Committee members also recommend the development of a one-day course for homeowners. The course will provide an introduction of IPM principles and will allow those who complete the program to bypass the requirement to interact with the certified pesticide dispenser by presenting the dispenser with proof of course completion.

During its inquiry the Committee also learned about the certification processes for pesticide dispensers and pesticide applicators. Members of the public identified weaknesses in the existing training curriculum and program design, and industry representatives and Ministry of Environment officials acknowledged there is potential to improve education and training in the province. The Committee believes that requirements to sell or apply pesticides need to be more stringent in order to ensure that pesticides are being applied safely and that applicators and dispensers are considering IPM principles.

More education for certified pesticide dispensers will mean that dispensers are aware of methods of dealing with weeds and pests and will be equipped to recommend a solution that is best suited to each specific pest case. By focusing additional education on the principles of IPM, dispensers will be equipped to recommend cultural pest management practices and products that will reduce overall pesticide use. It is important to get the information to consumers so that they can make informed choices about how best to care for their lawns and gardens.

The Committee believes that improved training for certified pesticide applicators is also necessary. By requiring a hands-on training course as part of the applicator certification program the Committee hopes to improve knowledge of IPM and pesticide use on or near residential areas. This additional certification requirement will also mean that employees are appropriately trained before they begin a job and that the quality of training is not as dependent on the employer.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Education

8. Improve public education on the use of Domestic-class products, with a focus on the right product at the right time, in accordance with IPM principles and to the extent possible, in ways that are consistent with BC organic standards and organic management practices.

9. Employ IPM specialist(s) to work with retailers and other stakeholders to educate the public on ways to eliminate pesticide use and increase alternative pest management methods. The specialist could be responsible for developing and/or coordinating and approving educational information developed through partnerships.

10. Make public education a combined responsibility of manufacturers, retailers, and government with manufacturers, retailers, and applicator businesses paying most of the cost; and provide resources to support non-commercial organizations dedicated to public education. Components of the outreach or promotion could be contracted out, similar in nature to the Recycling Council of BC, with an IPM specialist approving educational information and delivery methods.

11. Develop a separate list of preferred products that meet a set of criteria for sale/use on lawns, gardens and turf to assist certified dispensers and consumers when selecting pesticides.

12. Develop, in conjunction with retailers and manufacturers, a one-day course for consumers following which a graduate would be issued a card allowing a fast-track purchase of registered Domestic-class pesticides.

13. Establish a website for the householder using pesticides in and around private homes and gardens that explains the principles of IPM, alternative methods of treatment, and methods of lawn care that reduce the growth of weeds.

14. Amend the IPM Regulation regarding how pesticides can be used by landscapers for lawn and landscape pest management, to require IPM accreditation for landscaping licensees. A third party accreditation body, like Plant Health BC, could be required to audit its members for compliance with record keeping requirements of IPM Regulation and for good IPM practices.

15. Enhance retailer training by directing the retail industry to set up, at its own cost, a more comprehensive training and certification regime so that sales people in the retail setting are qualified to ensure consumer choices are in line with IPM principles; and develop a training course for pesticide applicators as a pre-requisite to test writing, with the course content to include the application of IPM principles in residential settings.

Golf Industry

The Committee received a large volume of input on the economic importance of golf courses and on the use of pesticides on golf courses. We would like to encourage further environmental stewardship and the implementation of IPM on all BC golf courses.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Golf

16. Ask the golf industry to develop a province-wide certification process, or to modify an existing one, that will ensure a high standard of pesticide use by all golf courses in BC, including the use of IPM principles.

Safe Disposal of Unwanted Pesticides

In addition to providing British Columbians with new and more comprehensive educational materials and learning opportunities, the Committee also believes that the safe disposal of pesticide products should be made as easy as possible to protect the natural environment and public health. We understand that there are options available for the disposal of most unwanted Domestic-class pesticides. For example Product Care Paint Plus Depots exist in every regional district. However, there are currently no permanent locations in BC where Commercial- or Restricted-class pesticides can be taken for disposal. We encourage the expansion and increased accessibility of safe disposal options for all classes of pesticide products.

Therefore the Committee recommends to the Legislative Assembly that the provincial government:

Safe Disposal of Unwanted Pesticides

17. Expand and enhance the provincial unwanted pesticide management program to facilitate the return of unwanted Domestic-, Commercial- or Restricted-class pesticide products.

Final Conclusion

Over the course of its inquiry the Committee studied the existing federal-provincial regulatory framework, heard varied opinions from over 8,600 e-consultation participants, and examined bans in other jurisdictions. The Committee concluded that despite the intensity of arguments in favour of a ban on the cosmetic use of pesticides and a general misunderstanding of the risks associated with chemicals, there is insufficient scientific evidence to support a province-wide ban on pesticides for cosmetic use. The majority of the Committee supports using science-based evidence and will not restrict access to products that are approved for safe use in Canada. In its commitment to "protect the public and reduce the use of pesticides according to the IPM principles," the Committee has focused its recommendations on strengthening regulations on pesticide sales, monitoring and education. The unnecessary use of pesticides can be reduced by providing British Columbians and businesses with the education, tools and support necessary to make informed pest management decisions.

Summary of Recommendations

The Committee recommends to the Legislative Assembly that the provincial government:

Ban

1. Ban the sale of Commercial-class pesticides as soon as possible, except for use by certified applicators. Begin immediate consultations with the agriculture industry on how best to prohibit the sale of Commercial-class pesticides to anyone but a certified applicator.

Point of Sale

2. Amend IPMA regulation(s) regarding how pesticides can be sold to require vendors to restrict consumer access to most Domestic-class pesticides so customers must interact with a certified dispenser before purchasing a pesticide.
3. Require a certified dispenser to ensure that there is a strong justification for pesticide use before a pesticide is sold, based on IPM principles, including the following:
    a. the best way to control pests and weeds;
    b. the right way to use a pesticide so that it does the job;
    c. the legal uses of the pesticide; and
    d. the importance of reading and following the directions on the label.
4. Require a vendor to keep a record of each sale of a Domestic-class pesticide, in line with the requirement for a vendor of a Commercial-class pesticide; and that government use the records of sales information to track Domestic-class pesticide sales.
5. Provide vendors with a reasonable phase-in implementation period.

Compliance and Enforcement

6. Increase inspections of retail outlets to ensure that pesticide products are accessible only by interaction with certified dispensers and that the consumer is receiving appropriate information and instruction.
7. Increase penalties for those vendors not meeting the responsibility that accompanies their right to sell the product.

Education

8. Improve public education on the use of Domestic-class products, with a focus on the right product at the right time, in accordance with IPM principles and to the extent possible, in ways that are consistent with BC organic standards, organic management practices.
9. Employ IPM specialist(s) to work with retailers and other stakeholders to educate the public on ways to eliminate pesticide use and increase alternative pest management methods. The specialist could be responsible for developing and/or coordinating and approving educational information developed through partnerships.
10. Make public education a combined responsibility of manufacturers, retailers, and government with manufacturers, retailers, and applicator businesses paying most of the cost; and provide resources to support non-commercial organizations dedicated to public education. Components

of the outreach or promotion could be contracted out, similar in nature to the Recycling Council of BC, with an IPM specialist approving educational information and delivery methods.

11. Develop a separate list of preferred products that meet a set of criteria for sale/use on lawns, gardens and turf to assist certified dispensers and consumers when selecting pesticides.
12. Develop, in conjunction with retailers and manufacturers, a one-day course for consumers following which a graduate would be issued a card allowing a fast-track purchase of registered Domestic-class pesticides.
13. Establish a website for the householder using pesticides in and around private homes and gardens that explains the principles of IPM, alternative methods of treatment, and methods of lawn care that reduce the growth of weeds.
14. Amend the IPM Regulation regarding how pesticides can be used by landscapers for lawn and landscape pest management, to require IPM accreditation for landscaping licensees. A third party accreditation body, like Plant Health BC, could be required to audit its members for compliance with record keeping requirements of IPM Regulation and for good IPM practices.
15. Enhance retailer training by directing the retail industry to set up, at its own cost, a more comprehensive training and certification regime so that sales people in the retail setting are qualified to ensure consumer choices are in line with IPM principles; and develop a training course for pesticide applicators as a pre-requisite to test writing, with the course content to include the application of IPM principles in residential settings.

Golf

16. Ask the golf industry to develop a province-wide certification process, or to modify an existing one, that will ensure a high standard of pesticide use by all golf courses in BC, including the use of IPM principles.

Safe Disposal of Unwanted Pesticides

17. Expand and enhance the provincial unwanted pesticide management program to facilitate the return of unwanted Domestic-, Commercial- or Restricted-class pesticide products.

Appendix A: Timeline

1969 – Parliament of Canada passes the *Pest Control Products Act* (PCPA)

1987 – Law Reform Commission of Canada recommends 23 improvements to the PCPA

1991 – Town of Hudson, Québec passes pesticide bylaw: Hudson bylaw 270 is the first example of a local government restricting the use of pesticides. In 1992 two lawn pesticide companies unsuccessfully challenged the validity of the bylaw. They continued their challenges through higher courts, also unsuccessfully. In a 2001 ruling, the Supreme Court of Canada upheld bylaw 270 and ruled that municipalities in most provinces have the right to regulate and restrict pesticide use.

1995 – Health Canada replaces Agriculture Canada as the agency responsible for pesticide regulation: This includes the creation of the Pest Management Regulatory Agency within Health Canada.

1996 – The United States reforms its pesticide regulations

1997 – Canadian pesticide manufacturers are required to cover the registration costs of their products

2000 – House of Commons Environment and Sustainable Development Committee Report: The Standing Committee notes that the PCPA had not been systematically revised since its creation in 1969, and makes a series of recommendations to modernize the *Act*.

2002 – Parliament of Canada enacts new *Pest Control Products Act*: Changes in the new *Act* include re-evaluations of older products and requiring tests to account for vulnerable sub-populations such as children. These changes take effect in 2006.

2003 – Québec pesticide ban: the Québec *Pesticide Management Code* is introduced in 2003 and fully phased in by 2006. This first provincial ban includes 20 active ingredients and applies to a wide range of areas.

2003 – Port Moody adopts pesticide bylaw: First bylaw passed by a BC municipality.

2008 – Ontario pesticide ban: The *Cosmetic Pesticide Ban Act* is passed in 2008 and implemented in 2009. Ontario's ban includes 96 active ingredients. Ontario's legislation is considered by many to be the strongest in Canada, but is also criticized by opponents as unscientific.

2009 – New Brunswick pesticide ban: Under the existing *Pest Control Act*, New Brunswick bans the use and sale of pesticide products containing 2,4-D, as well as fertilizer-herbicide products and those requiring mixing or dilution.

2009 – NAFTA arbitration agreement: Dow AgroSciences and the Government of Canada reach an agreement concerning Dow's NAFTA, Chapter 11 complaint concerning the use and sales prohibition of 2,4-D under Québec's *Pesticides Management Code*. The agreement reached includes the Government of Québec making a public statement that products containing 2,4-D do not pose an unacceptable risk to human health or the environment when used properly. However, Québec chooses to continue its ban.

2010 – PEI pesticide ban: PEI synchronizes its rules with New Brunswick.

2010 – Alberta pesticide ban: Alberta bans fertilizer-herbicide combination products (often called 'weed-and-feed'). This ban is based on the conclusion that weed-and-feed product use results in overuse of 2,4-D and threatens the health of waterways. The PMRA will deregister 'weed-and-feed' products at the end of 2012.

2011 – Nova Scotia pesticide ban: The *Non-essential Pesticides Control Act* comes into effect in April 2011 with regard to lawns and will expand in 2012 to include ornamental plants. This ban maintains a list of allowable pesticides; all others are prohibited for cosmetic purposes.

2011 – BC Special Committee on Cosmetic Pesticides: The Special Committee is struck on June 2 to look into the feasibility of eliminating the unnecessary use of pesticides in the province.

2012 – Newfoundland and Labrador: Updates to the *Pesticide Control Regulations, 2012* under the *Environmental Protection Act* institute a ban on the sale and use of products containing five active ingredients on lawns. The new regulations come into effect on May 1, 2012.

2012 – Federal de-regulation of fertilizer-pesticide combination products for lawn and turf: In February 2010 the PMRA issued a Re-evaluation Note concluding that fertilizer-pesticide combination products for lawn and turf do not support the goals of best practices for pest management on turf. The last date of sale these products was set for December 31, 2012.

Appendix B: E-questionnaire Results

1) Do you believe some uses of pesticides are solely cosmetic?

- Yes [5601]
- No [1553]

2) Do you support a ban on the sale and use of pesticides used solely for cosmetic purposes?

- Yes [4982]
- No [2268]

3) Why do you support a ban on the sale and use of pesticides, including those used solely for cosmetic purposes?

- Pesticides are harmful to the environment [4720]
- Pesticides pose a risk to human health [4709]
- There are safer alternatives on the market [3640]
- To promote consumer safety [3315]
- To reduce the reliance on pesticides [3771]
- Other [796]

4) Why do you oppose a ban on the sale and use of pesticides, including those used solely for cosmetic purposes?

- Existing regulations are sufficient [1520]
- The need for a ban is not supported by scientific evidence [1019]
- A ban will have a detrimental effect on business or industry [1336]
- Other [261]

5) Which of the following outdoor areas should be included in a possible ban on the sale and use of pesticides, including those used for cosmetic purposes?

- Lawns [4898]
- Private gardens [4495]
- Public landscaped areas [4874]
- Playing fields [4953]
- Areas adjacent to schools and childcare facilities [5216]
- Other [1050]
- I oppose a ban [1917]

6) When deciding which pesticides to ban or restrict, what criteria should be used?

- Specific active ingredients [4937]
- Specific pesticide products based on their use [3705]

- Specific pesticide products based on their concentration or package size [2907]
- Other [735]
- I oppose a ban [1811]

7) Which of the following business sectors should be exempt from a possible ban on the sale and use of pesticides, including those used for cosmetic purposes?

- Agriculture industry [3424]
- Forestry industry [3241]
- Landscape horticultural industry [1953]
- Golf industry [2594]
- Pest control services [3064]
- Professional lawn care services [1897]
- Other [1059]

8) How could a ban on the cosmetic use of pesticides be best implemented?

- Changes to current pesticide legislation and/or regulation [4981]
- Voluntary measures (eg. charter on safe pesticide use) [1758]
- Educational campaigns [4411]
- Other [1022]

9) In which cases do you consider the use of pesticides unnecessary?

- When used by key industries (eg. agriculture, forestry) [1920]
- When used to support human health (eg. bed bug eradication) [923]
- When used solely for cosmetic purposes on residential lawns and private gardens [5335]
- When used solely for cosmetic purposes on playing fields, playgrounds, and other public landscaped areas [4964]
- Other [1032]

10) Which statement best describes your view?

- Informed individuals should be able to buy and use pesticides of their choice. [1248]
- Pesticides should be applied only by trained individuals. [1403]
- Pesticides solely used for cosmetic purposes should be banned. [4458]

Appendix C: Local Pesticide Bylaws in Force in BC

Local Government	Introduced	Adopted	Enacted/In Force
Burnaby	June 9, 2008	June 16, 2008	April 1, 2009
Comox	July 19, 2006	Sept. 20, 2006	Jan. 1, 2008
Courtenay	June 11, 2007	July 3, 2007	Jan. 1, 2008
Coquitlam	February 20, 2012	April 23, 2012	-
Cumberland	Oct. 16, 2006	Nov. 6, 2006	Nov. 6, 2006
Delta	July 27, 2009	Nov, 16 2009	Nov, 16 2009
Esquimalt	May 20, 2008	July 14, 2008	July 14, 2009
Fernie	Feb 22 2010	March 8 2010	Jan 1 2011
Gibsons	March 15, 2005	April 19, 2005	April 19, 2005
Golden	August 11, 2009	October 5, 2010	April 1, 2011
Harrison Hot Springs	August 16, 2010	September 13, 2010	September 13, 2010
District of Invermere	Feb. 28, 2008	Feb. 24, 2009	May 1, 2009
Kamloops	July 14, 2009	July 28, 2009	March 15, 2010
Kelowna	July 25, 2006	Dec. 12, 2006	Jan. 1, 2009
Kimberly	Dec 14, 2009	Feb 8 2010	Feb 8 2010
District of Maple Ridge	July 25, 2006	Dec. 12, 2006	March 1, 2007
Nanaimo	April 26, 2010	April 4, 2011	April 4, 2011
Nelson	Jan. 22, 2007	July 23, 2007	July 23, 2007
New Westminster	March 2, 2009	March 23, 2009	March 1, 2010
Oak Bay	November 22, 2010	January 24, 2011	April 1, 2011
City of Pitt Meadows	July 5, 2011	September 6, 2011	March 1, 2012
Port Alberni	April 27, 2009	May 11, 2009	Jan. 1, 2010
City of Port Coquitlam	May 24, 2011	June 13, 2011	June 13, 2011
Port Moody	Nov. 25, 2003	Dec. 2, 2003	Jan. 1, 2006
Qualicum Beach	June 14, 2010	November 4, 2010	July 1, 2011
Revelstoke	April 12, 2011	October 4, 2011	October 4, 2011
Richmond	Sept. 11, 2009	Oct 13, 2009	Oct 13, 2009
District of Saanich	Dec. 14, 2009	January 25, 2010	May 1, 2010
Salmon Arm	Oct 14, 2008	Oct 27, 2008	March 1, 2009
District of Sechelt	Sept. 19, 2007	Feb. 20, 2008	Feb. 20, 2008
City of Surrey	May 3, 2010	May 4, 2010	May 4, 2010
District of Tofino	Sept 10, 2009	Sept 22, 2009	Sept 22, 2009
Vancouver	---	July 12, 2005	Oct. 2, 2007
City of North Vancouver	Nov 2, 2009	Nov 16, 2009	Jan. 1, 2010
District of North Vancouver	Sept. 24, 2007	July 7, 2008	Jan. 1, 2009
District of West Vancouver	Jan. 24, 2005	Feb. 14, 2005	Jan. 1, 2006
Victoria	Nov. 22, 2007	Jan. 31, 2008	Jan. 11, 2009
Whistler	Nov. 19, 2007	July 2008	Dec. 31, 2008
White Rock	May 11, 2009	Oct 5, 2009	Oct 5, 2009
City of Terrace	March 14, 2011	April 11, 2011	April 11, 2012

Source: British Columbia Ministry of Environment

Appendix D: Comparison of Existing Provincial Bans

	Announced/ Implemented	Objective	Nature of prohibition	Scope	Criteria re chemicals banned/ permitted	Golf issues	Notifying general/ immediate public
Alberta	Nov 2008/Jan. 2010	To protect and preserve Alberta and lakes by reducing the amount of chemical runoff.	Prohibit sale and use of pesticides for lawn maintenance and for landscaping on private land.	Lawns	Focus is on formulations; not based on active ingredients	Golf courses on public land must be licensed. Golf courses must employ at least one certified applicator.	Notices, lawn, all products still available.
New Brunswick	June 2009/Fall 2009	To reduce reliance on pesticides with contributes to a sustainable environment.	Prohibit sale and use of 2,4-D, cosmetic domestic lawn care products, pesticide fertilizer mixtures, lawn and products and granular products. Landscape companies must be IPM accredited.	Lawns	Check based for potential for adverse and overuse. 2,4-D precluded based on public concern. Further use might check to determine when can and cannot be sold.	IPM accreditation required. 2,4-D can be used by accredited firms.	Notices, lawn, domestic products available for residential use.
Newfoundland and Labrador	July 2011/ May 2012	Limited to economic and personal use research, limited to other jurisdictions.	Prohibit the sale of the active ingredients for lawncare. Only low-risk pesticides may be used in public spaces. Prohibit the application of carbaryl, 2,4-D, mecoprop, dicamba, and MCPA.	Lawns	Limited to the most commonly used lawn pesticides. Use of five active ingredients.	Golf courses must be licensed, applicators must be certified.	Unknown
Nova Scotia	May 2010/ April 1, 2011 (lawn) and April 1, 2012 (commercial)	To help promote the health of Nova Scotians.	Prohibit the sale of non-essential pesticides for use on lawns (2011) and commercially (2012). Pesticides considered to pose a reduced risk may be used.	Lawns in 2011 and, commercially, 2012	Check based on Ontario classification; include only a few of allowable products.	Applicators must be certified.	Chainsaws available from certain vendors.

	Assessment/ Implementation	Objectives	Measures/prohibitions	Scope	Criteria re: low-risk/ banned pesticides	Other issues	Voluntary/non-binding measures taken
Ontario	April 2009/ April 2009	To help prevent the health and environmental problems caused by pesticides, and the use of such substances in all, land and water.	Prohibits the use of cosmetic pesticides with only essential uses. Prohibits the use of cosmetic pesticides on golf courses. Prohibits residential use of pesticides unless a reduced risk may be used. Requires that professional applicators and consultants be licensed. Requires that pesticides be applied by certified applicators. Prohibits the use of 2,4-D, MCPA and mecoprop for all purposes except golf courses. Requires that pesticides be applied by certified applicators. Requires that pesticides be applied by certified applicators.	Applies to all outdoor residential and landscaped areas (lawns, gardens, driveways, gardens, parks, and school yards).	Criteria developed based on hazard and properties of risk. Criteria include pesticide inability "unsafe" as applicable and are described on label. Where pesticides are authorized and classified by the Ontario Pesticides Advisory Council.	Accreditation required to use pesticides. Only trained and prepared and trade public or animal. Report on how they maintain pesticide use.	Organics and pesticides available for sale are banned pesticides can be applied by Ontario. Application area required. Assessment and approval from government are limited.
Yukon Electoral District	December 2007/April 1, 2010	To promote prevention and safety by minimizing the potential for misuse or overuse of pesticides.	Prohibits use of 2,4-D, environmental chemicals, lawn care products, pesticides fertilizer mixtures, lawn seed products and granular products. Landscape companies must be IPM accredited.	Lawns	Criteria based on potential for cancer and overuse. 2,4-D restricted in response to public concern. Window on appeal criteria to determine what can remain for sale.	Applicators must be certified and cover use 2,4-D purchase an IPM program.	Organics available from certain vendors.
Quebec	Phase in from 2003 to 2006.	To limit the harmful effects of pesticides on human health, especially children, and the environment.	Prohibits the use of pesticides for aesthetic purposes, and 20 active ingredients for lawn care. Prohibits the use of 3 common pesticides for private land. Prohibits the indoor use of certain pesticides. Prohibits the use of pesticides for schools and daycares.	Lawns and more	New training system currently being developed based on hazard criteria.	Pesticide application plan signed by specialist to supplied to vendor pesticide.	Organics is available. Intention to enact regulations to allow for exemptions.

Appendix E: Glossary

Acceptable risk: The health or environmental risks of a pest control product are acceptable if there is reasonable certainty that no harm to human health, future generations or the environment will result from exposure to or use of the product, taking into account its conditions or proposed conditions of registration.

Active ingredient: The component within a pesticide to which the intended effects can be attributed.

Acute toxicity: Ability of a substance to cause adverse effects within a short time of dosing or exposure.

Adverse effect: A change in the biochemistry, morphology, physiology, growth, development, or lifespan of an organism which results in impairment of functional capacity, impairment of capacity to compensate for additional stress, or increase in susceptibility to other environmental influences.

Aggregate exposure: Combined exposure to a single given chemical by multiple pathways, e.g. ingestion, inhalation, and contact with the skin or eyes.

Aggregate risk: Total risk from all sources of a pesticide exposure.

Bioaccumulation: A process in which substances collect in all, or part of, a living organism.

Biomagnification: The process by which the tissue concentration of bioaccumulated chemical residues increases as materials pass up the food chain through two or more trophic levels.

Certified pesticide applicator: An individual who is certified by the BC Pesticide Control Branch through examination to use or supervise use of pesticides in a specific category.

Certified pesticide dispenser: An individual who is certified by the BC Pesticide Control Branch through examination to sell pesticides.

Commercial-class pesticide: Federally assigned class of pesticide. Assigned when a pest control product is to be distributed for use in commercial activities that are specified on the label.

Cumulative exposure: The summation of exposures of an organism to a chemical or chemicals over a period of time.

Development toxicity: Adverse effects produced by exposure of developing organisms to toxicants during development.

Domestic-class pesticide: Federally assigned class of pesticide. Assigned when a pest control product is to be distributed primarily to the general public for personal use in or around their homes.

Exposure: Contact with a substance by ingestion, inhalation, or contact with the skin or eyes.

Epidemiology: The study of the incidence and spread of disease within populations, with the aim of establishing causality.

Formulant: Pesticide ingredient that serves a purpose other than the actual control of the targeted pest. For example emulsifiers to prevent the settling of liquids in the container or carriers to deliver the active ingredient uniformly.

Genotoxicology: The branch of toxicology that deals with the genetic effects of toxic substances, especially the production of mutation by chemical means.

Hazard: The inherent toxicity of a chemical.

Integrated Pest Management (IPM): A process for managing pest populations that includes: planning and managing ecosystems to prevent organisms from becoming pests; identifying pest problems and potential pest problems; monitoring populations of pests and beneficial organisms, damage caused by pests and environmental conditions; using injury thresholds in making treatment decisions; suppressing pest populations to acceptable levels using strategies based on considerations of: biological, physical, cultural, mechanical, behavioural and chemical controls in appropriate combinations as well as environmental and human health protection.

Invasive plants: Non-native plant species that have been introduced, either intentionally or accidentally, into the environment from other areas. Without their natural pathogens and predators, they are capable of moving aggressively into an area, and monopolizing resources such as light, nutrients, water, and space to the detriment of other species.

Invasive species: Plants, animals, aquatic life and micro-organisms that outcompete native species when introduced outside of their natural environment; alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Maximum Residue Limit (MRL): The amount of a pesticide which has been determined may safely remain in, or on, a food crop without hazard to the consumer.

Neurotoxicity: The ability of a substance to cause adverse effects on the nervous system.

NOEAL (no observed adverse effect level): The highest dose of a pesticide that does not produce detectable adverse effects.

Noxious weed: A weed defined by law as being particularly undesirable, troublesome, or difficult to control. Control is mandatory under the provincial *Weed Control Act*.

Pest: An animal, a plant, fungus, virus, weed, or bacterial organism that is injurious, noxious or troublesome.

Pesticide or pest control product: Any substance or mixture of substances used to control, destroy, attract, or repel a pest, or to lessen or prevent its harmful or troublesome effects. Pesticide can include insecticides, fungicides, algicides and herbicides.

Precautionary principle: Defined in the *Pest Control Products Act* as: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent adverse health impact or environmental degradation."

Product label: The product label that is approved as part of the registration process contains the conditions of registration that, along with the PCP Act and Regulations, govern the use of the product. In effect, the label is a legislative document. Use of a product in a manner that is inconsistent with the directions or limitations on the label is prohibited. Any control product offered for sale in Canada must bear the approved label.

Public land: Defined in the Integrated Pest Management Act Regulation as Crown land that is not private land, bodies of water and land owned or leased for its own purposes by a local authority, a university or institution, a board or francophone education authority, a regional hospital board of district or a government corporation.

Reference dose: Term used to estimate maximum daily exposure to a substance by the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious effects during a lifetime.

Registrant: Organization or individual that holds the certificate of registration and is thereby responsible for the product. A registrant can be a chemical company, federal or provincial agency, importer or any person wishing to market a pest control product in Canada. The registrant's name and address must appear on the product label.

Restricted-class pesticides: Federally assigned class of pesticide. Assigned when a pest control product, out of concern for its health or environmental risks, has additional information to be shown on the label concerning essential conditions of display, distribution or limitations on use.

Risk: The likelihood that a subject will be harmed, or experience an adverse outcome, if exposed to a particular hazard. Risk is a function of the intrinsic hazard of a substance and the likelihood of exposure.

Synergistic exposure: A toxicological interaction in which the combined biological effect of two or more substances is greater than the sum of their individual effects.

Toxicity: The ability of a substance to cause injury or adverse effect.

Toxicokinetics: Quantification and determination of the time course of absorption, distribution, biotransformation and excretion of chemicals by the body.

Toxicology: The study of poisonous materials and their effects upon living organisms.

Uncertainty factors: Factors used to account for inter- and intra-species differences in relation to toxic effects, and uncertainties associated with the data.

List of Participants

Presentations

BC Agriculture Council, Reg Ens, Garnet Etsell, 26-Oct-11 (Victoria)
BC Landscape and Nursery Association, Hedy Dyck, Jeff Foley, Blair Veitch, 26-Oct-11 (Victoria)
British Columbia Business Council, Greg D'Avignon, Ken Peacock, Jennifer Robertson, 07-Nov-11 (Vancouver)
Canadian Association of Physicians for the Environment, Dr. Cathy Vakil, 07-Nov-11 (Vancouver)
Canadian Cancer Society, British Columbia and Yukon, Barbara Kaminsky, Kathryn Seely, 08-Nov-11 (Vancouver)
Canadian Consumer Specialty Products Association, Shannon Coombs, 17-Nov-11 (Victoria)
Certified Organic Associations of BC, Randy Pearson, 26-Oct-11 (Victoria)
CropLife Canada, Pierre Petelle, 07-Nov-11 (Vancouver)
David Suzuki Foundation, Lisa Gue, 08-Nov-11 (Vancouver)
Health Canada, Pest Management Regulatory Agency, Lindsay Hanson, 06-Oct-11 (Victoria); Dr. Peter Delorme, Jason Flint, Lindsay Hanson, Dr. Connie Moase, 17-Jan-12 (Video Conference, Victoria)
Integrated Environmental Plant Management Association of Western Canada, Jacquie Doherty, Paul Visentin, 08-Nov-11 (Vancouver)
Integrated Vegetation Management Association of BC, Peter Mohammed, Gwen Shrimpton, Dave Spata, 08-Nov-11 (Vancouver)
Invasive Plant Council of BC, Gail Wallin, 26-Oct-11 (Victoria)
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Ministry of Agriculture, Grant Thompson, Madeline Waring, Linda Wilson, 25-Jan-12 (Victoria)
Ministry of Enviroment, Daphne Dolhaine, Jim Hofweber, Jim Standen, 22-Aug-11 and 25-Jan12 (Victoria)
Ministry of Forest, Lands and Natural Resource Operations, Jennifer Burleigh, 25-Jan-12 (Victoria)
National Allied Golf Association - British Columbia, Douglas Ferne, Kris Jonasson, Jerry Rousseau, 26-Oct-11 (Victoria)
Pesticide Free BC, Judy Wigmore, 17-Nov-11 (Victoria)
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Teena Wood
Jason Woodall
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Clark Woodland
Woodmere Nursery, Joe Wong
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Gerrit Woods
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Glenda Woodward
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Marg Wright
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Thelma Wright
Winston Wright
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Judy Young
Karen Young
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Melina Young
Robert Young
Sandra Young
Steve & Dorothea Young
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Michelle Yule
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